Addendum to the

Administration Guide for Supervising Teachers

for Senior 1 Mathematics

Please note the Assessment and Evaluation Branch will **not** be collecting a random sample of Senior 1 Mathematics Standards Test *Student Response Booklets* this semester.

When submitting materials after local marking (to be received by the Assessment and Evaluation Branch no later than June 18, 2004), your package should include:

- All *Answer/Scoring Sheets;* and
- The *Local Marking Co-ordinator Feedback Form* (see page 13).

Senior 1 Mathematics
Standards Test

Administration Manual for Supervising Teachers

June 2004

Manitoba

Building for the Future

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Manitoba Education, Citizenship and Youth,
Assessment and Evaluation Branch,
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Preface

This *Administration Manual for Supervising Teachers* is distributed to teachers and administrators, and must be read prior to administering the standards test. The rules and guidelines in this manual must be strictly observed to ensure the consistency of standards test administration.

Please use this manual in conjunction with the registration package, the *Policies and Procedures for Standards Tests* handbook and the *Information Bulletin* (these documents are available on our website at: http://www.edu.gov.mb.ca/ks4/assess/publications.html) to gain a full understanding of the protocols and procedures associated with this test. This manual contains general information about the test, step-by-step instructions for the test administration, and policies regarding absenteeism, lateness, violation of rules, etc.

If you encounter exceptional circumstances not addressed in this manual, or if you have further inquiries, contact Marina Royo, Administrative Officer, at 945-7620 or toll-free at 1 800 282-8069, extension 7620.

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General Information

Manitoba Education, Citizenship and Youth develops all standards tests in collaboration with teachers from across the province. This standards test is based on the *Senior 1 Mathematics: Manitoba Curriculum Framework of Outcomes and Senior 1 Standards (1997)* and *Senior 1 Mathematics: A Foundation for Implementation (1997).*

The Senior 1 Mathematics Standards Test will be administered as an optional test at the discretion of the local jurisdiction. Once the decision is made to administer the test, schools are to follow the test administration procedures set out by the department.

The standards test is locally marked. Participating school divisions/districts and independent schools will determine the percentage of the mark on the standards test to be counted toward the student's final mark to a maximum of 25% of the student's final mark. Student results on the test will be released to students according to local policy on the date designated by local jurisdictions.

Marking instructions are provided by the department immediately following test administration. School principals will receive the Senior 1 Mathematics Standards Test *Marking Guides* by June 9, 2004. The *Marking Guides* are to be stored in a secure location until 12:00 noon on June 9, 2004.

Students are expected to write the standards test as scheduled near the end of the semester in which they take the course (e.g., January for first-semester courses, June for second-semester and full-year courses).

All schools should receive the test materials by May 31, 2004. The number of test booklets sent to each school is based on the February 20, 2004 registration information provided by the school. Please advise Marina Royo, Administrative Officer, at 945-7620 or toll-free at 1 800 282-8069, extension 7620, immediately if the number of students registered to write the test has increased since registration.

Manitoba Education, Citizenship and Youth supports local marking by:

- training representatives from local jurisdictions to act as local marking co-ordinators;
- collecting and scanning all *Answer/Scoring Sheets* from jurisdictions to provide them with test result summaries;
- centrally marking a random sample of locally-marked test booklets to provide feedback to jurisdictions on their local marking; and
- providing provincially-funded local jurisdictions with $10.00 for each test administered in accordance with the test schedule noted on the following page and marked locally. The calculation is based on the number of students whose completed marking scan sheets have been received.

Features of the test

As a result of changes to the Senior 1 Mathematics curriculum which took effect in September 2001, the length and format of the standards test is as follows:

- the test will be administered in one session of **2 hours** with an additional 30 minutes if requested by the student and at the discretion of the classroom teacher; and
- the two curricular choices, Choice I and Choice II, **will be contained in the same test booklet**.

The remaining features of the test are unchanged:

- the test will contain both selected-response and constructed-response items;
- among the constructed-response items, the test will include "open-response" items which will be scored according to the Standards-Based General Scoring Rubrics (4-mark and 6-mark) found in Appendix A of the *Information Bulletin*; and
- English or French versions of the test will be available for students enrolled in Senior 1 Mathematics and "Mathématiques de secondaire 1".

Schools/classes choosing to cover all units from both choices are to have students select either Choice I or Choice II for testing purposes. The remaining unit is to be assessed locally.

Test schedule

The following table summarizes the schedule for the Senior 1 Mathematics Standards Test:

Date	Preparation Time	Time Required for Test
Wednesday, June 9, 2004	15 minutes preparation and instructions	2 hours + 30 minutes (optional)

The test must be written between 8:30 a.m. and 12:30 p.m. on Wednesday, June 9, 2004.

The total writing time for the session is 120 minutes plus 15 minutes for preparation and instructions. Additional writing time of 30 minutes is permissible if needed.

Policies for Standards Tests

Principals and supervising teachers should be aware that *Policies and Procedures for Standards Tests* handbook has been distributed to all schools and is also available on our website at: http://www.edu.gov.mb.ca/ks4/assess/publications.html. This handbook outlines current policies and procedures related to the administration of standards tests and reflects the principles and guidelines contained in *Principles for Fair Student Assessment Practices for Education in Canada (1993).*

Adaptations

Schools are asked to identify and submit requests for test adaptations **at the time of student registration**. These requests should be submitted on the *Request for Adaptations Form* included with the registration package. Following departmental review of the adaptation requests received, schools will be advised of the department's decision regarding these requests (see *Policies and Procedures for Standards Tests*, Sections 4.0, 4.1 and 4.2).

Exemptions

Decisions for student exemptions that fall within the guidelines set out in *Policies and Procedures for Standards Tests* (Sections 5.0, 5.1 and 5.2) are made at the school level and do not require departmental approval. Schools are required, however, to report school-based exemptions on the *Student Exemption Report* included with the registration package. If additional student exemptions are needed after the registration deadline date, an additional *Student Exemption Report* should be submitted as soon as possible.

For exemptions that fall outside the parameters of policy and procedure guidelines, requests should be made **at the time of student registration**. Please submit requests in writing to Wenda Dickens, Acting Director, Assessment and Evaluation Branch, 71–1567 Dublin Avenue, Winnipeg, Manitoba R3E 3J5.

Re-read provisions

As the reporting of individual student scores on locally marked standards tests is the responsibility of each local jurisdiction, the re-read policy for these tests is determined locally. Should a re-read be required for a test booklet that has been sent to the department as a part of the feedback on the marking process, the department will return a photocopy of the test booklet upon request. Please contact Marina Royo, Administrative Officer, at 945-7620 or toll-free at 1 800 282-8069, extension 7620.

Return of tests to students

Local jurisdictions decide whether to keep the test booklets or return them to students. The department will return the random sample of test booklets to schools within three months of marking.

Test confidentiality

Test materials must be kept secure and sealed until administration.

Test booklets must not be reproduced nor information from them communicated in any way until test administration is completed.

The *Marking Guides* are to be stored in a secure location until the test administration is complete.

Student materials

Students may use the following materials during the Senior 1 Mathematics Standards Test:

- scientific calculators;
- HB pencils;
- manipulative materials, such as algebra tiles, cubes and tracing paper;
- geometry sets;
- rulers; and
- erasers.

Students are not permitted to exchange materials during the test.

The following materials must **not** be used during the test:

- classroom notes, classroom textbooks, and other such materials;
- subject-related materials on display;
- dictionaries or translation resources of any kind; and
- graphing calculators. NEW!

Students leaving the room

Students are expected to remain in the room for a minimum of 60 minutes from the start of the test or the entire session.

However, any student who must leave and re-enter the room should be accompanied by a replacement supervisor. This practice ensures that the supervising teacher can remain in the test room with the students at all times.

Late arrivals

To avoid the opportunity for student discussion of test questions during the administration of the test, students may not enter the test room after the first hour of writing.

Students who arrive late, but within the first hour of the test, may be allowed additional time corresponding to the amount by which the student was late, at the discretion of the principal.

Student absences

Students who are absent for the Senior 1 Mathematics Standards Test will not be given another time to write the test. Schools have the responsibility to provide a final mark to absent students.

Responding to student questions

Avoid making any directing/guiding comments during the test, other than those required for distribution of materials and instructions to students.

No explanations, translations, rephrasing, clarifying statements or comments of a similar nature may be provided about the test content unless otherwise specified. Supervising teachers can, however, provide clarification regarding test taking rules or procedures.

If a student asks a question related to test content, a suggested response is, "I'm sorry. I can't answer your question. Do your best with it."

Suspected errors in printing or wording should not be communicated to students unless specific instructions are received from the Assessment and Evaluation Branch. You may however contact Ken Horton, Assessment Consultant, at 945-2576 or Barbara Riou, Assessment Consultant, at 945-4035 or toll-free at 1 800 282-8069, extension 2576 or 4035 respectively to report any suspected errors.

Violation of rules

The *Test Taking Rules* are read aloud to students by the supervising teacher immediately before the test (see Appendix 1, page 17).

Document any violation of rules on the *Supervising Teacher Report*. This documentation should include:

- the test booklet number; and
- a description of the circumstances, including available evidence.

The student may be permitted to complete the test.

The consequences of any violation of rules is a local decision.

Damaged or misprinted materials

Students should be assured that they will not be penalized for any obvious error in printing or wording. Local marking co-ordinators will be advised of any known errors before the marking session. Return the unused damaged or misprinted booklet(s) with the reports and forms being sent to the department immediately after the test session.

On test administration date

If a damaged or misprinted test booklet is discovered **at the start** of the test session:

- replace the damaged or misprinted test booklet with a new test booklet; and
- print "DAMAGED" on the test booklet cover and on the *Attendance Form*.

During test administration

If a damaged or misprinted test booklet is discovered **during** the writing of the test:

- give the student a new test booklet (the student keeps the damaged or misprinted test booklet until the end of the session);
- instruct the student to continue responding to test items in the new test booklet;
- collect both test booklets at the end of the test session and ensure that both booklets are kept together by bundling with an elastic band;
- cross out the existing booklet number on the new test booklet and change it to the original booklet number so that **all student responses are recorded under the original booklet number**;
- indicate on the *Attendance Form* that two booklets have been used for one student (see Appendix 5, page 21); and
- record the damaged or misprinted test booklet number on the *Supervising Teacher Report*.

Responsibilities of School Principals

It is the responsibility of the principals to ensure that the tests are kept confidential until test administration is completed.

Other responsibilities are listed below.

If tests are not in your school by May 31, 2004, contact Marina Roy.

Use the *Packing List* to confirm that all materials have been received. Count the shrink-wrapped test booklets to ensure that there are enough booklets for the number of students writing the test. Keep the shrink-wrapped test packages unopened until the morning of the test. If additional test materials are needed, immediately contact Marina Royo, Administrative Officer.

Store test materials in a secure area in the school.

Provide supervising teachers with a listing of MET numbers for the students registered to write the test. Call the Professional Certification and Student Records Unit at 1 800 667-2378 to obtain MET numbers for new students.

Make arrangements to meet the requirements of the adaptations approved for your students (see Adaptations, page 3 and *Policies and Procedures for Standards Tests*, Sections 4.0, 4.1 and 4.2).

Co-ordinate test scheduling and space requirements.

Minimize the frequency of school announcements during the test session.

Ensure that a replacement supervisor is available to accompany students who must temporarily leave the room.

Provide the test materials to the supervising teacher on the morning of the test.

Complete the *Principal Feedback Form* before the end of the test session.

Advise the Assessment and Evaluation Branch of school closures or suspended school bus transportation services that occur on the test date as a result of unusual or extenuating circumstances or inclement weather conditions. Please contact Ken Horton, Assessment Consultant, at 945-2576 or Barbara Riou, Assessment Consultant, at 945-4035 or toll-free at 1 800 282-8069, extension 2576 or 4035 respectively.

Responsibilities of Supervising Teachers

Supervising teachers administer the test using the step-by-step procedures outlined in the following section.

(✓)	**Advance preparations**
	1. Check with your principal to ensure that:
	– appropriate scheduling and allocation of space for the test has occurred;
	– the test materials itemized on the *Packing List* have been inventoried;
	– a replacement supervisor is available to accompany students who must temporarily leave the room during the test;
	– arrangements have been made to accommodate the adaptations approved for students; and
	– a list of MET numbers for students writing the test is available.
	2. Ensure that all subject-related materials have been removed from the walls and boards.
	3. Notify students in advance of the:
	– time, location and duration of the test session;
	– materials needed to write the test;
	– *Test Taking Rules* (see Appendix 1, page 17);
	– list of *Directing Words* (see Appendix 2, page 18); and
	– minimum time a student must remain in the test room (60 minutes).
	4. Ensure that you have extra supplies and that there is a functioning pencil sharpener and stapler in the room. Students must not exchange materials during the test.
	5. If there is more than one teacher supervising the test, photocopy the *Supervising Teacher Report*.
	6. Review the sample forms in the Appendices.
	7. Please note that the pre-printed *Demographic Data Forms* already have the students' names and MET numbers and should be distributed accordingly.

(✓)	Prior to test session
	1. Ensure that you have access to the following test materials:
	– *Packing List*;
	– *Student Response Booklets*;
	– *Attendance Forms* (enclosed with shrink-wrapped test booklets);
	– extra copies of test booklets (four extras + teacher copy);
	– *Demographic Data Forms* (pre-printed and generic);
	– a list of MET numbers for students writing the test;
	– *Answer/Scoring Sheets*;
	– *Supervising Teacher Report*;
	– *Supervising Teacher Feedback Form*;
	– *Principal Feedback Form* (this must be given to the principal and collected before returning materials);
	– *Administration Manual for Supervising Teachers* (this document); and
	– labelled envelope for return of materials to the Assessment and Evaluation Branch.
	2. Count the number of *Student Response Booklets*. The number of test booklets should equal the number requested by the school plus the additional 4 booklets. The number of booklets should also be identical to the number on the *Packing List*. If you need to split a bundle of booklets between classrooms, make a photocopy of the *Attendance Form*. Adjust each copy of the *Attendance Form* to reflect the booklets being used in each classroom.
	3. Arrange the desks so they are spaced as far apart as possible.
	4. Remove the following from the envelope labelled "For the Return of *Demographic Data Forms*": – pre-printed *Demographic Data Forms* in alphabetical order for every student registered to write the test. Ensure that the school name, school code, and MET numbers appearing on the pre-printed forms are accurate (see Appendix 3, page 19); and – generic *Demographic Data Forms* for students who joined the classroom after registration, February 20, 2004, and who are scheduled to write the test (see Appendix 4, page 20). **Note:** Only **one** *Demographic Data Form* should be completed for each student. If a pre-printed *Demographic Data Form* exists for a student, that is the form that should be used. **DO NOT** complete a generic *Demographic Data Form* for that student.
	5. Sort the pre-printed *Demographic Data Forms* for distribution.
	6. Make arrangements per school policy to ensure that students who are exempted from writing the test are accommodated in an alternate setting.

(✓)	**Beginning the test session**
	1. Distribute:
	– *Student Response Booklets*;
	– *Answer/Scoring Sheets* (double-sided); and
	– *Demographic Data Forms*.
	2. Tell students that while they are working you will: – be circulating the *Attendance Form* so they can print their names beside their test booklet number.
	3. Remind students to check that the booklet number on the *Answer/Scoring Sheet* corresponds with the number on the *Student Response Booklet*.
	4. Read aloud instructions for completing *Demographic Data Forms*. The instructions are found on the form itself. Direct students to print and shade in all the information requested. Remind students to accurately record the program (English, French Immersion, or Français) in which they are enrolled.
	5. Collect the *Demographic Data Forms*.
	6. Read aloud *Test Taking Rules* to students (Appendix 1, page 17).
	7. Read aloud *Points to Remember* to students (page *iii* in the test booklet).
	8. Remind students to:
	– pace themselves in writing the test;
	– use the *Answer/Scoring Sheet* for responding to selected-response questions; and
	– check over their work to ensure that all questions have been attempted.
	9. Tell students to complete common items and Choice I ***OR*** common items and Choice II. Direct them to use the appropriate side of the *Answer/Scoring Sheet*. Students must not make marks on the side they are **not** using as this affects the scannability of the form.
	10. **Instruct students to turn the page and begin. Record the start time on the *Supervising Teacher Report*.**
(✓)	**During the test session**
	1. Supervise the completion of the *Attendance Form* by ensuring that students print their name beside their test booklet number. Ensure that each student has recorded the correct test booklet number by verifying that the test booklet number corresponds with the student name recorded on the *Attendance Form* (see sample *Attendance Form*, Appendix 5, page 21). **Note:** This is the only record connecting students' identities to their *Student Response Booklet*.

	2. Verify that all the information on each *Demographic Data Form* is accurately printed and shaded. – If the new information provided on the pre-printed *Demographic Data Form* is inaccurate, correct it. – If the information on the generic *Demographic Data Form* is inaccurate, erase the error and record the correct information. Place all used forms in numerical order followed by any unused forms in the labelled envelope provided. Do not use elastic bands, staples or paper clips on these forms as they may damage the sheets. Do not seal the envelope.
	3. Half-way through the test session, advise students of the amount of time remaining by writing it on the board.
(✓)	**Ending the test session**
	1. Have students place their *Answer/Scoring Sheet* inside the front cover of the test booklet. Collect test booklets from each student.
	2. As students submit their test materials, ensure that each test booklet number matches the information on the *Answer/Scoring Sheet,* the *Attendance Form* and the *Demographic Data Form* (e.g., cross-reference student name and test booklet number). Each student must have the same booklet number on all test materials.
	3. Place a check "✓" on the *Attendance Form* in the "Booklet Submitted to Local Marking Co-ordinator for Marking" column, indicating either Choice I **or** Choice II for students who wrote the test.
	4. **Record the time students finish writing the test on the *Supervising Teacher Report.*** Do not include extra time given for late arrivals or adaptations.
	5. Stack the test booklets in numerical order.
	6. If marking is conducted in the classroom or at the school, leave the *Answer/Scoring Sheets* inside the front cover of each booklet. After marking, place all used *Answer/Scoring Sheets* in numerical order followed by any unused forms. Place the forms in the labelled envelope. Do not seal the envelope. If marking is conducted in a central location, place all used *Answer/Scoring Sheets* in numerical order followed by any unused forms. Place the forms in the labelled envelope. Do not seal the envelope.
	7. Complete the *Supervising Teacher Report*. Note any unusual circumstances on this report.
	8. Ensure that the number of check marks in the "Booklet Submitted to Local Marking Co-ordinator for Marking" column on the *Attendance Forms* matches your count of the booklets and *Answer/Scoring Sheets* for submission.
	9. Make two copies of the *Attendance Forms* and *Supervising Teacher Report*. One copy must be retained by the school and one forwarded to the local marking site, if a centralized marking model is used.
	10. Collect the *Principal Feedback Form*.
	11. Complete the *Supervising Teacher Feedback Form*.

	12. Return all test booklets and other test-related materials to the secure area in the school until commencement of marking or until materials are to be forwarded to the local marking site.
	13. Send materials according to the instructions on the following pages.

Points to Remember

- Remain in the classroom throughout the entire test session and engage in work solely related to the duties of supervising the test.
- A replacement supervisor must be available to assist you.
- Store all documents not in use in a secure area in the school.
- Ensure that once a booklet number has been assigned to a student, all materials distributed to that student have the same booklet number.
- Students may **not** bring anything produced outside of class into the test session.

Submitting materials on June 9, 2004 (the end of the test)

It is essential that the following materials are packaged and forwarded to the local marking site immediately after completion of the test if a centralized model is used.

- **All used** *Student Response Booklets*;
- **All used** *Answer/Scoring Sheets*;
- Copy of the *Attendance Forms*; and
- Copy of the *Supervising Teacher Report*.

All other documentation should be verified and returned to the Assessment and Evaluation Branch after the test session.

- *Attendance Forms*;
- **All used** *Demographic Data Forms* (in envelope provided);
- *Supervising Teacher Report*;
- *Supervising Teacher Feedback Form*;
- *Principal Feedback Form*; and
- **All** damaged or misprinted booklets.

Schools in the City of Winnipeg return their envelopes to the Assessment and Evaluation Branch by calling Mid-Canada Courier (989-5630) and arranging pick-up between **1:00 p.m. and 4:00 p.m.** on **June 9, 2004**. The person placing the call should quote **account number E901**, provide the school name, address and the name of the contact person.

Schools outside the City of Winnipeg return their envelopes to the Assessment and Evaluation Branch by using the Xpresspost Flexipack envelope provided and taking it to the post office.

Submitting materials after local marking

(to be received by the Assessment and Evaluation Branch no later than June 18, 2004)

When local marking is done at a central location, the **local marking co-ordinator** is responsible for sending the materials to the Assessment and Evaluation Branch. When local marking is done at the classroom level, the **teacher** is responsible for sending the materials to the Assessment and Evaluation Branch.

After local marking has been completed, prepare a package to be received by the Assessment and Evaluation Branch no later than June 18, 2004. This will ensure there is sufficient time for processing prior to semester end.

The package must include:

- **All** *Answer/Scoring Sheets*;
- *Student Response Booklets* requested by the department for feedback on the marking process;
- *Sample Request List*; and
- *Local Marking Co-ordinator Feedback Form*.

Jurisdictions within the City of Winnipeg send packages directly to the Assessment and Evaluation Branch via **Mid-Canada Courier (989-5630)**. The person placing the call should quote **account number E901**, give the jurisdiction name, address, and the name of the contact person.

Jurisdictions outside the City of Winnipeg return their package by Xpresspost. It is important to package all materials in the **Xpresspost Flexipack envelope** provided whenever possible.

After the package is sealed, deliver it to the local post office.

We have provided sufficient materials for the return of **one** envelope/package. If you must send a second envelope/package, photocopy the mailing address label and affix the copy to the second package. Note you must use a photocopy of the mailing address label as it provides Canada Post with billing information. Ask the postal clerk for an additional bar code label to attach to the second envelope/package. Ensure that the school representative retains the bar code number in case tracing the package is required.

Return **all** *Answer/Scoring Sheets*. We remind you that payments will be made according to the number of completed marking sheets received.

Appendices

Appendix 1: Test Taking Rules

Senior 1 Mathematics Standards Test

The supervising teacher is expected to read these rules aloud to students at the beginning of the Senior 1 Mathematics Standards Test:

- Check the title of your test booklet carefully. Make sure that the number on your test booklet matches the number on your *Answer/Scoring Sheet*.
- During this test session, do not proceed until instructed to do so.
- If you receive a damaged or misprinted booklet, raise your hand and I will give you a new one.
- You are expected to remain in the test room for **one hour**. (You may leave before that time in exceptional circumstances such as illness, when accompanied by a supervisor.)
- At the beginning of the session you should only have a scientific calculator, an HB pencil, a geometry set, a ruler and an eraser. You may also have manipulative materials. No other materials are permitted. Do not exchange test materials.
- You will not give assistance to, nor receive assistance from another student. If you require something during the test, raise your hand and I will come to you.
- During the test I can help you with the directions, but I will not be able to help you with the test questions.
- Do **not** identify yourself, your school, teacher or town in your test booklet.
- When I ask you to stop writing, put your pencil down immediately.
- You may not discard any materials. The test booklet must remain intact except for the tear-out "Formulas" page numbered *ii*. Any extra paper used must be stapled into the test booklet on the appropriate page. You may **not** leave the room with any materials pertaining to the test.
- Use the appropriate side of the *Answer/Scoring Sheet* corresponding either to Choice I or to Choice II as I have indicated to you. Do not put any marks on the side you are **not** using as this affects the scannability of the form.

Appendix 2: Directing Words

Senior 1 Mathematics Standards Test

Students should be prepared to answer questions containing the following directing words:

The word	The question is asking for...
create	an idea or object that you have made up
justify/support/verify	an explanation, information or evidence that shows why your method, idea or answer is good
explain	words or symbols, diagrams, charts or graphs, or other methods that **make clear** what you mean or what you are thinking
illustrate/sketch	a reasonably neat picture or diagram (not necessarily to scale) that shows or explains an idea or method
model	a sketch that shows an idea; a type of explanation
assumption	anything or any condition that is not given in the question but that you have supposed or invented to find the answer to the problem
generalization	a general idea, statement, rule or principle that relates an answer or conclusion to other similar situations

Appendix 3: Sample Pre-printed Demographic Data Form

DEMOGRAPHIC DATA FORM / FORMULAIRE DE DONNÉES DÉMOGRAPHIQUES

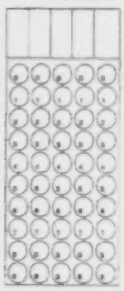
SENIOR 1 MATHEMATICS STANDARDS TEST – JUNE 2004/
TEST BASÉ SUR LES NORMES MATHÉMATIQUES DE SECONDAIRE 1 – JUIN 2004 1

School/ École	**9999 SCHOOL NAME**	Program/ Programme	**ENGLISH**
Name/ Nom	**NAME, STUDENT**		
Birth Date/ Date de naissance	**01/01/01**	Provincial Student Number/ Numéro provincial de l'élève	**999-999-999**

INSTRUCTIONS TO THE STUDENT:

1. Write and shade in the **Booklet No.**
2. Use an HB pencil only. Do not use ink, ball point, or felt tip pens.
3. Erase cleanly any marks you wish to change.
4. Do not mark other areas on this form.
5. If the pre-printed information is inaccurate, please cross it out and write in the correct information.

Booklet No./
N° de cahier



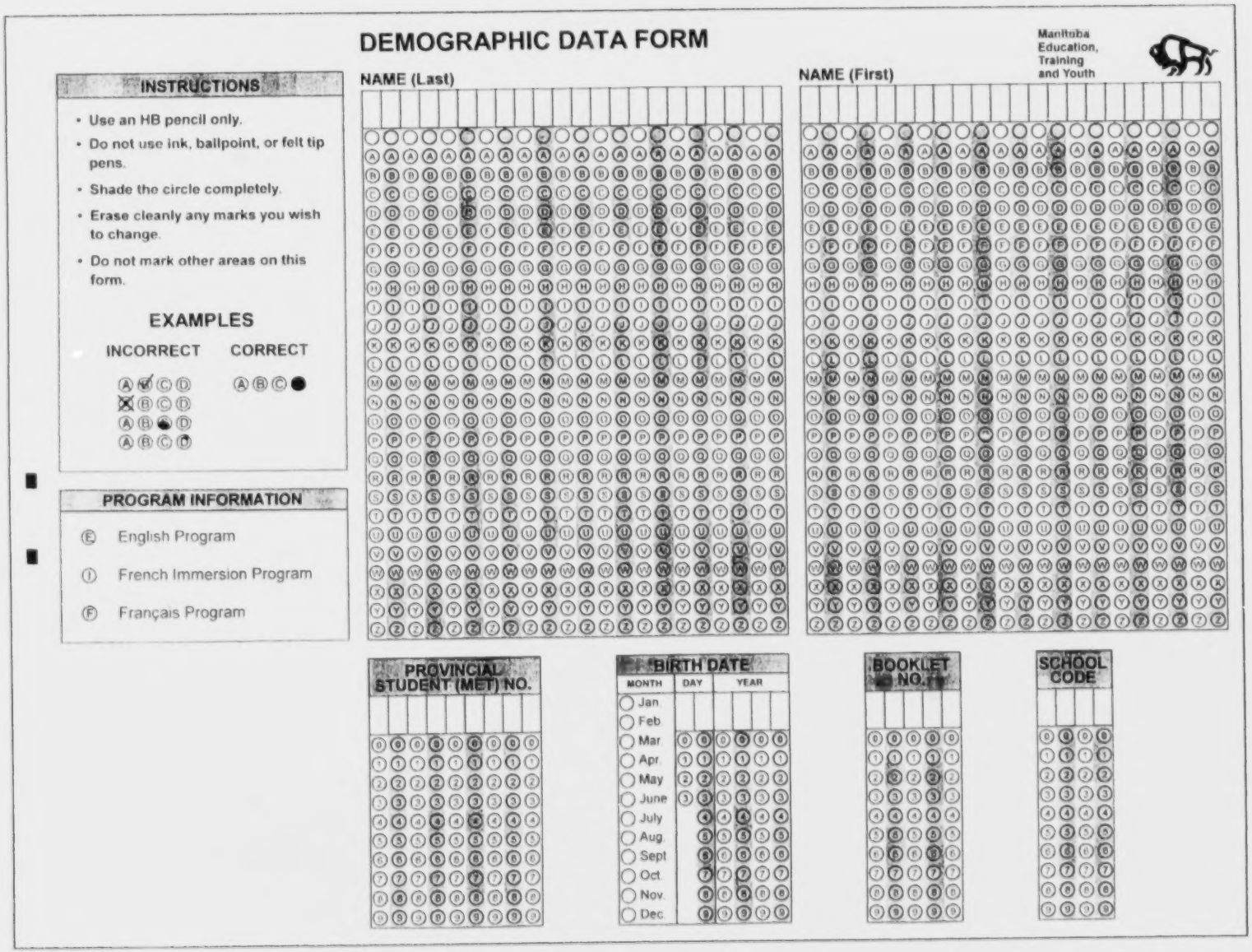
DIRECTIVES À L'ÉLÈVE:

1. Inscrire votre **N° de cahier** et noircir les cercles qui y correspondent.
2. Utiliser seulement un crayon HB. Ne pas utiliser de stylo à encre ou à bille, ni de crayon feutre.
3. Bien effacer toute marque que vous désirez changer.
4. Ne pas faire de marques à d'autres endroits sur ce formulaire.
5. Si les renseignements pré-imprimés sont inexacts, les rayer et écrire les renseignements exacts.

9999

Appendix 4: Sample Generic Demographic Data Form

Appendix 4: Sample Generic Demographic Data Form



DEMOGRAPHIC DATA FORM

Manitoba Education, Training and Youth

INSTRUCTIONS

- Use an HB pencil only.
- Do not use ink, ballpoint, or felt tip pens.
- Shade the circle completely.
- Erase cleanly any marks you wish to change.
- Do not mark other areas on this form.

EXAMPLES

INCORRECT	CORRECT
Ⓐ ✓ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ ●
✗ Ⓑ Ⓒ Ⓓ	
Ⓐ Ⓑ ◒ Ⓓ	
Ⓐ Ⓑ Ⓒ Ⓓ	

PROGRAM INFORMATION

- Ⓔ English Program
- Ⓘ French Immersion Program
- Ⓕ Français Program

NAME (Last)

NAME (First)

PROVINCIAL STUDENT (MET) NO.

BIRTH DATE

MONTH	DAY	YEAR
Jan.		
Feb.		
Mar.		
Apr.		
May		
June		
July		
Aug.		
Sept.		
Oct.		
Nov.		
Dec.		

BOOKLET NO.

SCHOOL CODE

Appendix 5: Sample Attendance Form

School Number: 9999
Somewhere School
Somewhere Address
Somewhere MB R0R 0R0

Page _____ of _____

ATTENDANCE FORM—JUNE 2004

SENIOR 1 MATHEMATICS STANDARDS TEST

Booklet Number	Student Name (*please print*)	Booklet Submitted to Local Marking Co-ordinator for Marking (*check ✓ one only*)	
		Choice I	Choice II
30001	Karen Masi	✓	
30002	Walter Woronowski	✓	
30003	Michael Smith	✓	
30004	DAMAGED		
30005	Jason Chu	✓	
30006	Shelley Bracken	✓	
30007	Bonnie Walters	✓	
~~30008~~	Used with 30006 (damaged)		
30009	UNUSED		
30010	UNUSED		

Note: Record a "✓" for each booklet submitted for marking.

Mr. John Ormiston
Supervising Teacher's Name (*please print*)

Please retain a copy of this form for your records. You will need a copy of this form to link your locally marked test with a student's name.

SENIOR 1 MATHEMATICS STANDARDS TEST

Student Response Booklet Choice I and Choice II

June 2004

Manitoba
Building for the Future

Bundle No. ☐☐☐☐

Choice I ☐

Choice II ☐

Marker 1

TABLE NO. ☐☐

MARKER ID NO. ☐☐☐

Marker 2

TABLE NO. ☐☐

MARKER ID NO. ☐☐☐

Marker 3

TABLE NO. ☐☐

MARKER ID NO. ☐☐☐

SENIOR 1 MATHEMATICS STANDARDS TEST

GENERAL DIRECTIONS FOR COMPLETING THE PRE-PRINTED *DEMOGRAPHIC DATA FORM*

- Please check the following information on the *Demographic Data Form*. It is important that this information is both accurate and complete. If the information is not accurate, cross it out and write the correct information.

  1. NAME (Last and First)
  2. PROGRAM INFORMATION
  3. BIRTH DATE

- Please provide the following information on the *Demographic Data Form*:

  BOOKLET NO.: This is the five-digit number on the front of your test booklet. Write in your booklet number and fill in the appropriate circle below each number.

GENERAL DIRECTIONS FOR COMPLETING THE GENERIC *DEMOGRAPHIC DATA FORM*

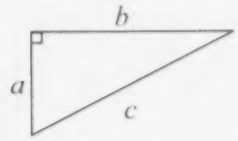
- If a pre-printed form is not available for you, provide the following information on the generic *Demographic Data Form*. It is important that this information is both accurate and complete.

  1. NAME (Last and First): Print your last and first names in the spaces provided and fill in the corresponding circle below each letter.
  2. PROGRAM INFORMATION: Fill in the circle that corresponds to the program in which you are currently registered.
  3. PROVINCIAL STUDENT (MET) NO.: This is your provincial identification number which is available from your teacher.
  4. BIRTH DATE: Fill in the appropriate circles and write in the appropriate numbers.
  5. BOOKLET NO.: This is the five-digit number on the front of your test booklet. Write in your booklet number and fill in the appropriate circle below each number.
  6. SCHOOL CODE: You will be provided with this four-digit number. Write in your school code and fill in the appropriate circle below each number.

SENIOR 1 MATHEMATICS

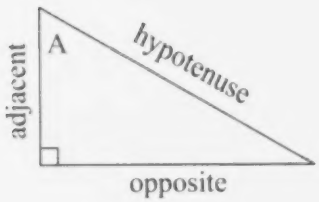
FORMULAS

Pythagorean Theorem



$$a^2 + b^2 = c^2$$

Trigonometric Ratios

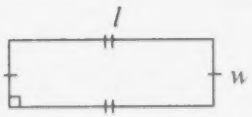


$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan A = \frac{\text{opposite}}{\text{adjacent}}$$

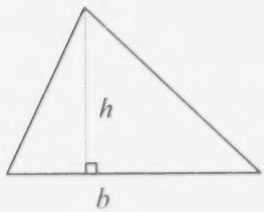
rectangle



$A = lw$

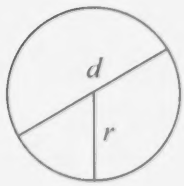
$P = 2l + 2w$

triangle



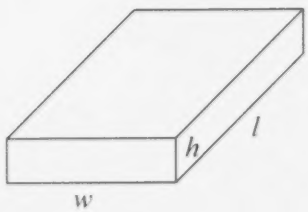
$$A = \frac{bh}{2}$$

circle



$A = \pi r^2$

$C = 2\pi r \quad C = \pi d$



Volume = lwh

Surface Area = Total area of all faces of a 3-D object.

SENIOR 1 MATHEMATICS STANDARDS TEST

POINTS TO REMEMBER

Formulas are given on the tear-out **"Formulas"** page on the other side of this page or with the question when needed. Please do not tear out any pages other than the **"Formulas"** page.

Diagrams are not drawn to scale unless indicated otherwise.

The total time allowed for writing the test is 150 minutes (120 minutes plus 30 minutes extra time which your teacher may allow if you need it).

- Do not write your name on the test booklet.
- Work alone on this test.
- You may use a scientific calculator. All other electronic aids are not allowed.
- You may use models or other manipulative materials, including tracing paper.
- Notes, notebooks or textbooks may not be used during the test.
- You may use blank scrap paper but it must be handed in at the end of the test. You may do rough work anywhere in this booklet.
- Be sure you have attempted each question in both parts of the test including the questions for Choice I **OR** Choice II in both parts. Your teacher will tell you which Choice (I or II) to do.
- Be sure you use the correct side of the *Answer/Scoring Sheet* corresponding to the Choice (I or II) you are doing.

If you need more space to answer a question, you may use an extra page provided by your teacher. Write your Booklet ID number and question number on any extra page(s) used. Staple the page(s) into your booklet where your answer begins.

DESCRIPTION—COMMON ITEMS AND CHOICE I (Spatial Geometry)

Total possible marks: 70 **Time: 120 minutes**

This test consists of 2 parts:

Part	Description	Suggested Time (minutes)	Marks
A	*Selected-response questions*: worth one mark each.	40	26
B	*Constructed-response questions*: mark value is indicated for each question.	80	44

DESCRIPTION—COMMON ITEMS AND CHOICE II (Transformational Geometry)

Total possible marks: 70 **Time: 120 minutes**

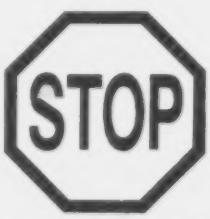
This test consists of 2 parts:

Part	Description	Suggested Time (minutes)	Marks
A	*Selected-response questions*: worth one mark each.	40	26
B	*Constructed-response questions*: mark value is indicated for each question.	80	44

DIRECTIONS FOR PART A: SELECTED-RESPONSE QUESTIONS

(Suggested Time: 40 minutes)

- Read each question carefully.
- Choose the best response and mark it on the ***Answer/Scoring Sheet***. Be sure to use the correct side of the *Answer/Scoring Sheet* (Choice I or Choice II) as directed by your teacher.
- Each question should take no more than about two minutes to answer. If a question is taking too long to answer, come back to it later.



PLEASE WAIT UNTIL THE TEACHER TELLS YOU TO TURN THE PAGE.

(blank page)

PART A

SELECTED-RESPONSE QUESTIONS

1. If $x = 3a$ and $y = 2a$, then $2x + y =$

   A) $5a$ B) $6a$ C) $8a$ D) $10a$

2. Bob and Sue want to meet for lunch.
   After waking, Bob prefers to wait at least 3 hours before eating.
   Sue needs to finish lunch at least 2 hours before her 2:45 p.m. swimming lesson.
   If Bob wakes up at 8:45 a.m. and lunch takes 45 minutes, when can Bob and Sue meet for lunch?

   A) 11:30 a.m. B) 11:40 a.m. C) 11:50 a.m. D) 12:10 p.m.

3. Which dimensions produce a cone with the greatest volume?

   A) $r = 1, h = 6$
   B) $r = 2, h = 5$
   C) $r = 3, h = 4$
   D) $r = 4, h = 3$

   Volume of cone $= \dfrac{\pi r^2 h}{3}$

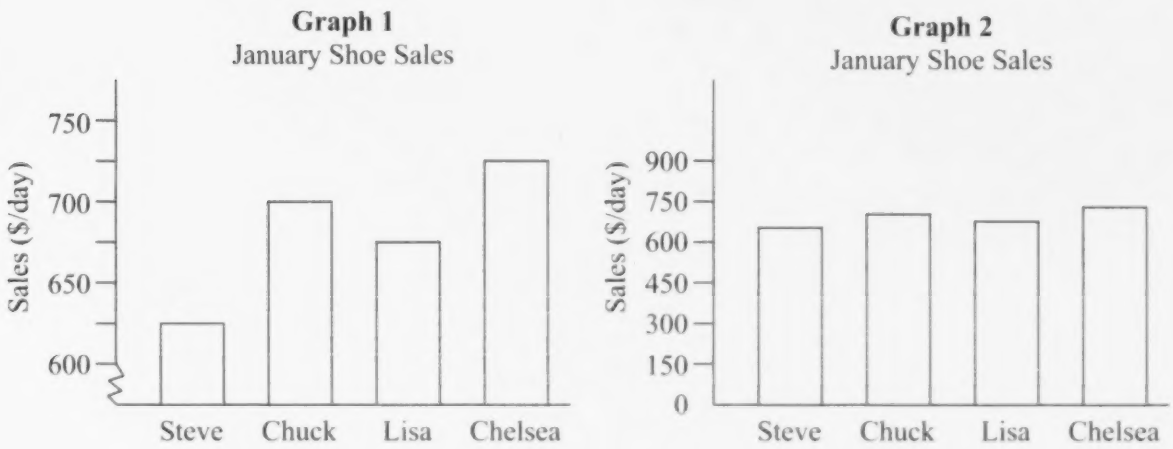
4. Graph 1 and Graph 2 show the same information about shoe sales for four sales persons. Which of the following statements is correct?

A) Chelsea's sales are about 3 times those of Steve.

B) There is less than $50 difference between Steve's and Chuck's sales.

C) Graph 1 could be used to make differences in sales appear greater.

D) Steve would probably choose Graph 1 rather than Graph 2 to show his boss.



5. Given the expression $16 - 10x^2$, which of the following statements is correct?

A) The constant term is -10; the numerical coefficient is 16.

B) The constant term is 10; the numerical coefficient is 16.

C) The constant term is 16; the numerical coefficient is 10.

D) The constant term is 16; the numerical coefficient is -10.

6. The mathematical expression for the statement "twice the sum of x and 3" is:

A) $2(x+3)$ B) $2+(x+3)$ C) $2x+3$ D) $(x+3)^2$

7. The simplified expression for $5+(x+3)-(2x+2)$ is:

A) $-x+6$ B) $-x+10$ C) $3x+10$ D) $3x+13$

8. Which equation below is equivalent to $6(x-3)=-2(x-7)$?

A) $6(x-3)=-2(-x+7)$

B) $6x-18=-2x+14$

C) $3(2x-6)=-2x-7$

D) $6x-3=-2x-7$

9. Solve the following: $2x+6=-6x+30$.
Verify your solution.
The result of the verification is:

A) $-6=-6$ B) $8=8$ C) $12=12$ D) $15=15$

10. John has five more quarters than dimes.
The number of dimes is represented by x.
The total value of the coins is \$5.45.
Which equation represents this situation?

A) $0.25(x + 5) + 0.10x = 5.45$

B) $0.25x + 0.10(x + 5) = 5.45$

C) $0.25x + 0.10(x - 5) = 5.45$

D) $25(x + 5) + 10x = 5.45$

11. Solve the equation: $3x - (-2x) - 2 = 5 - 3x$

A) $x = \frac{7}{8}$ B) $x = \frac{8}{7}$ C) $x = \frac{7}{2}$ D) $x = \frac{3}{2}$

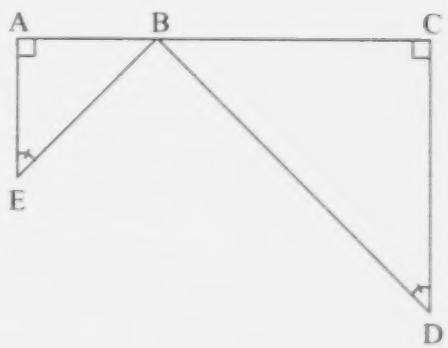
12. Which of the proportions is correct for the diagram?

A) $\frac{CB}{CD} = \frac{DB}{AB}$

B) $\frac{AB}{BC} = \frac{BE}{BD}$

C) $\frac{CD}{AE} = \frac{BC}{BE}$

D) $\frac{AB}{BE} = \frac{BC}{CD}$



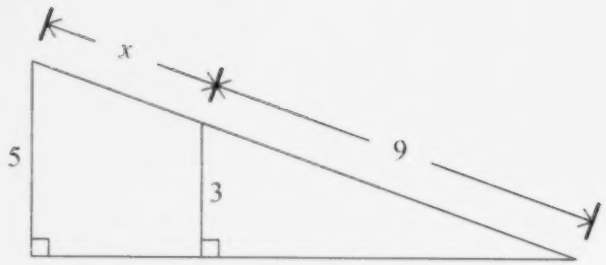
13. Calculate the value of x.

A) 5.4

B) 5.6

C) 6.0

D) 15.0



14. A survey determined that the probability that someone is **right handed** is $\frac{9}{10}$. According to this survey, what is the probability that two people chosen at random would be **right handed**?

A) $\frac{18}{100}$ B) $\frac{81}{100}$ C) $\frac{9}{10}$ D) $\frac{18}{10}$

15. Jim flipped a regular coin five times.
It landed heads all five times.
What is the theoretical probability that it will land heads on the next flip?

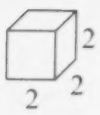
A) less than $\frac{1}{2}$

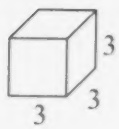
B) greater than $\frac{1}{2}$

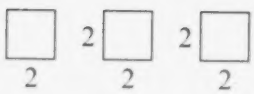
C) $\frac{1}{2}$

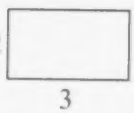
D) $\frac{5}{2}$

16. Which diagram represents the expression 2^3?

A) 

B) 

C) 

D) 

17. $-4^2 + (-3)^2 =$

A) -25 B) -7 C) 7 D) 25

18. $\dfrac{6x^3 + 2x^2}{x^2}$ is equal to:

A) $6x^3 + 2$ B) $6x + 2$ C) $8x^3$ D) $6x + 2x^2$

19. $(x-3)(x-3) =$

A) $2x-6$

B) x^2+9

C) x^2-6x+9

D) x^2-6x-9

20. Find the value of the expression below if $x = 3$ and $y = 5$:

$$2x^2 + 3xy + y^2$$

A) 106 B) 104 C) 88 D) 67

21. The mass of a single bacterium is 1.8×10^{-6} grams.
What is the mass of 2750 of these bacteria?

A) 4.95×10^{-6} g B) 4.95×10^{-3} g C) 4.95×10^{3} g D) 4.95×10^{9} g

22. Solve for x: $x^2 = 36$

A) -18 or 18 B) -6 or 6 C) 6 D) 18

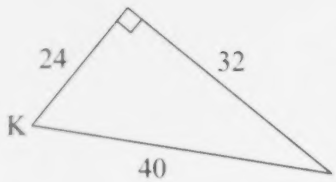
23. Which trigonometric ratio is correct?

A) $\angle K = \cos^{-1}\left(\frac{32}{40}\right)$

B) $\angle K = \tan^{-1}\left(\frac{32}{40}\right)$

C) $\angle K = \tan^{-1}\left(\frac{24}{32}\right)$

D) $\angle K = \sin^{-1}\left(\frac{32}{40}\right)$



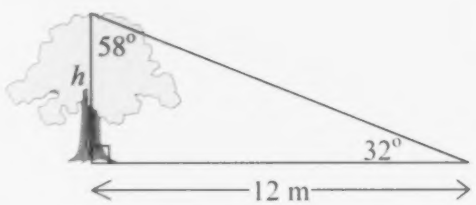
24. Calculate the height (h) of the tree.

A) 6.4 m

B) 7.5 m

C) 10.2 m

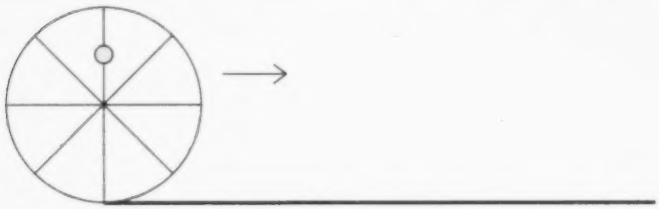
D) 14.1 m



Complete Choice I on pages 9–10
***OR* Choice II on page 11.**

CHOICE I: SPATIAL GEOMETRY

25. A reflector is attached to a bicycle wheel as shown in the diagram.

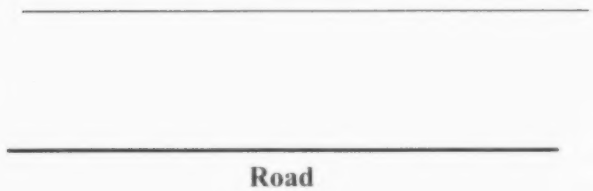


Which of the following demonstrates the path of the reflector as the wheel travels along the road?

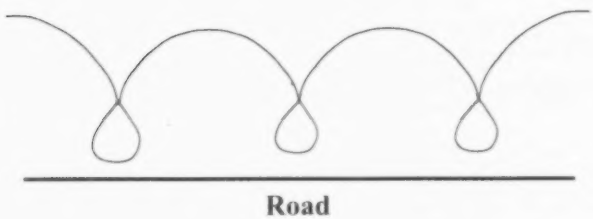
A)

B)

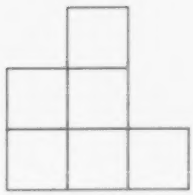
C)



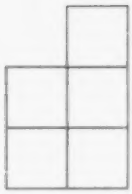
D)



26. Which of the following objects has the front and right side elevations shown?

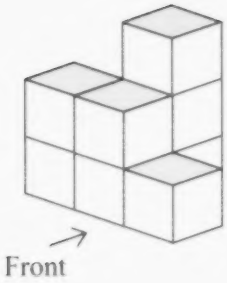


Front

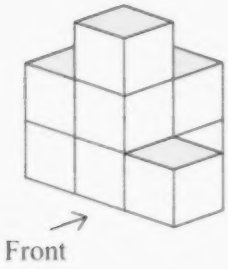


Right side

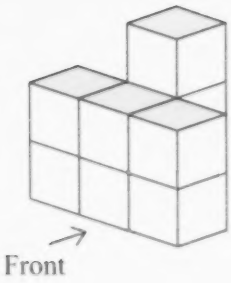
A)



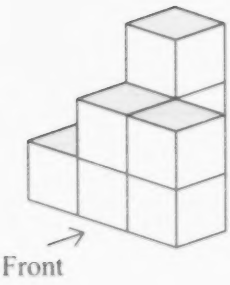
B)



C)



D)

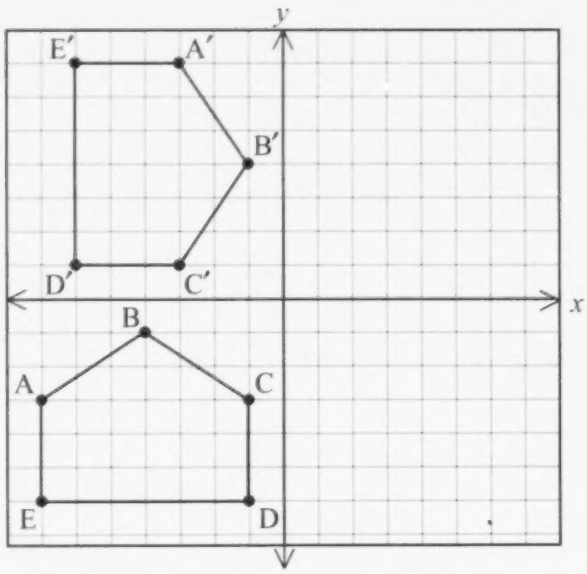


End of Choice I Selected-Response Questions.

Now go to Part B: Constructed-Response Questions on page 13.

CHOICE II: TRANSFORMATIONAL GEOMETRY

25. Describe the single transformation of ABCDE to its image A′B′C′D′E′.



A) reflection in the x-axis

B) translation $(x + 3, y + 5)$

C) rotation 90° clockwise about the origin

D) rotation 270° clockwise about the origin

26. Which of the following does **not** result in a congruent image?

A) a reflection in the x-axis

B) a translation $(x + 1, y - 1)$

C) a rotation 180° about the origin

D) a dilatation by a scale factor of 2

End of Choice II Selected-Response Questions.

Now go to Part B: Constructed-Response Questions on page 13.

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DIRECTIONS FOR PART B: CONSTRUCTED-RESPONSE QUESTIONS

(Suggested Time: 80 minutes)

Write your answers in the space provided with each question. If you need more space to answer a question, you may use an extra page provided by your teacher. Write your Booklet ID number and question number on any extra page(s) used. Staple the page(s) into your booklet where your answer begins.

Directing Words

Some questions may include directing words such as *explain*, *justify* and *create*. These words are explained below.

The word	The question is asking for...
create	an idea or object that you have made up
justify/support/verify	an explanation, information or evidence that shows why your method, idea or answer is good
explain	words or symbols, diagrams, charts or graphs, or other methods that **make clear** what you mean or what you are thinking
illustrate/sketch	a reasonably neat picture or diagram (not necessarily to scale) that shows or explains an idea or method
model	a sketch that shows an idea; a type of explanation
assumption	anything or any condition that is not given in the question but that you have supposed or invented to find the answer to the problem
generalization	a general idea, statement, rule or principle that relates an answer or conclusion to other similar situations

Suggestions for answering OPEN-RESPONSE QUESTIONS:

- provide **complete answers**;
- let the mark values for each question guide you in answering it;
- provide good explanations and justifications; and
- use a systematic and well-organized method in communicating the answer.

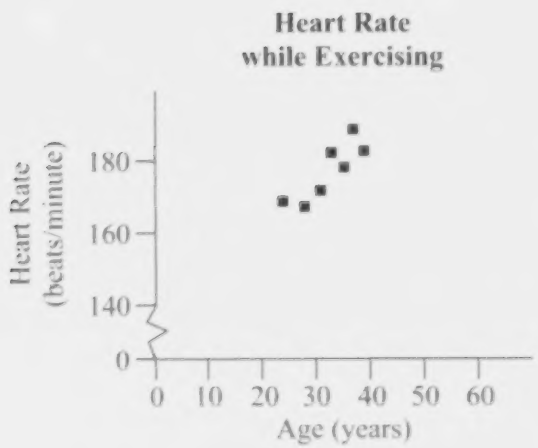
DO NOT USE

PART B

CONSTRUCTED-RESPONSE QUESTIONS

27. Lisa's statistics report compares age and heart rate for a group of people while they are exercising. 101

Lisa's Graph:



a) Describe the relationship (correlation) displayed by the graph.

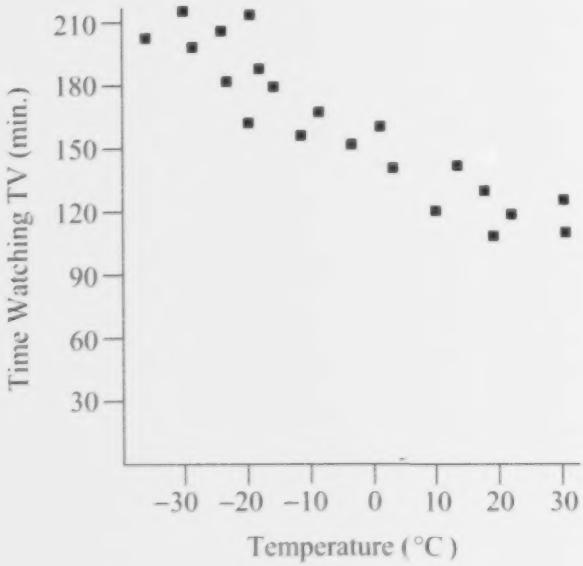
b) Lisa wants to use her data to predict a person's heart rate while exercising. Describe a factor Lisa may have forgotten when collecting her data.

2 marks

DO NOT USE

28. A Senior 1 Math class collected data on the daily outside temperature and the amount of time students watched TV. 102

Relationship Between Watching Temperature and TV



a) Draw the line of best fit.

b) According to your line of best fit, estimate the amount of time students watch TV when the temperature is −10°C.

2 marks

DO NOT USE

29. The government surveys high school students in Manitoba to determine the effect of part-time jobs on their grades. 103

a) Describe the **population** of the survey.

b) Describe what information needs to be collected from each student in the sample. Be complete and specific.

c) Describe one bias that is **possible** in this situation.

4 marks

DO NOT USE

30. a) Write a number that is a natural number between $5\frac{1}{2}$ and 9.3. 104

b) Write a number between -10 and -3 that is a rational number but **not** an integer.

2 marks

31. a) Simplify: $-5y(3x^2 - 2x + 6) + 2x^2(3y)$ 105

Show your work.

b) Jackie simplified the expression $4(3m + 5) - 3(2m - 7)$ in the following way:

$$4(3m + 5) - 3(2m - 7)$$
$$= 12m + 20 - 6m - 21$$
$$= 6m - 1$$

Explain Jackie's mistake.

3 marks

DO NOT USE

106

32. OPEN-RESPONSE QUESTION

Art's Pizza Palace charges \$5.20 for a pizza and \$0.90 for each topping.
Ross' Restaurant charges \$5.80 for a pizza and \$0.60 for each topping.
Both pizzas are the same size.

a) How much will a pizza with four toppings cost at Art's Pizza Palace?

b) Julie orders a pizza from Ross' Restaurant for \$10.
How many toppings were on the pizza?

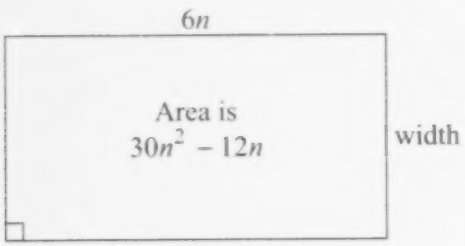
c) You want to order pizzas that are the same price from each restaurant.
Using the variable t, write an equation to find out how many toppings (t) are on these pizzas. (Do not solve the equation.)

d) You open your own pizza restaurant and find that the most popular pizza ordered has four toppings.
You want your total price to be between Art's and Ross' prices for a pizza with four toppings.
How much will you charge per pizza and per topping?

4 marks

DO NOT USE

33. A diagram of a rectangular playing field is shown below. 107
The length of the field is $6n$ metres.



a) Write the simplified algebraic expression for the width of the field.

b) If $n = 0.8$, calculate the area of the field.

2 marks

34. Solve the equation. Show your work. 108

$0.1x - 5.2 = 4.8 - 1.9x - 4$

2 marks

DO NOT USE

35. The table shows the total number of students in three different classrooms, as well as the number of girls in each class.

	Students	Girls
Class A	30	18
Class B	20	12
Class C	24	10

109

a) A student is randomly selected from each class. From which class is a **boy** most likely to be selected?

b) Sally is in Class A, Chris is in Class B and Frank is in Class C. If one student from each class is randomly selected to form a committee, what is the probability that these three students will be on the committee?

3 marks

36. **OPEN-RESPONSE QUESTION**

a) Simplify $\frac{x^{12}}{x^4}$.

110

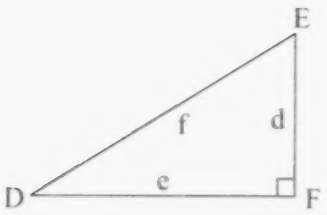
b) Using three **different** exponent laws other than the quotient law used in a), write three expressions that give **the same answer** as a).

Expression 1 | Expression 2 | Expression 3

4 marks

DO NOT USE

37. a) Write the words **hypotenuse**, **adjacent** to $\angle D$ and **opposite** to $\angle D$ on the appropriate sides of the triangle DEF. 111



b) Explain why $\sin \angle D = \cos \angle E$ in ΔDEF.

2 marks

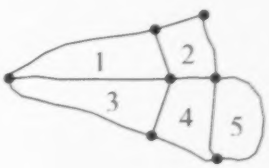
DO NOT USE

38. **OPEN-RESPONSE QUESTION** 112

The map below is drawn showing towns, roads and regions.

map:

5 regions
7 towns
11 roads



- towns are represented by •
- towns are connected by roads
- regions are identified with numbers
- roads only intersect at towns

a)
- Draw three different maps, each with five regions.
- Use a different number of towns for each map.
- Number each region like the above example.

Map 1	Map 2	Map 3

b) Complete the table:

Map	No. of Regions	No. of Towns	No. of Roads
example	5	7	11
1	5		
2	5		
3	5		

c) Describe one pattern that relates the number of regions, roads and towns. The pattern must work for all maps.

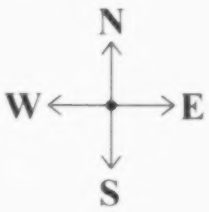
d) What would be a pattern for any map with three regions?

4 marks

DO NOT USE

39. Mark goes for a hike. He leaves his car and walks 3.4 km straight north and then 2.7 km straight east. He then turns and walks in a straight line back to his car. 113

a) Draw and label a diagram that represents the path Mark walked.



b) Using trigonometry, calculate the angle Mark follows when he turns to head straight back to his car. Show your work.

3 marks

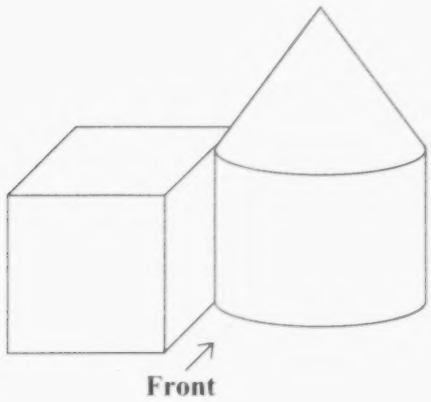
Complete Choice I on pages 25–26
***OR* Choice II on pages 27–29.**

(blank page)

DO NOT USE

CHOICE I: SPATIAL GEOMETRY

40. This diagram was drawn from a model made of a rectangular prism, cylinder and a cone. Draw the top view, the right elevation and the front elevation. 114



Top View	Right Elevation	Front Elevation

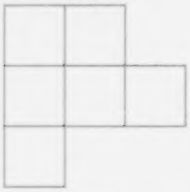
3 marks

DO NOT USE

41. **OPEN-RESPONSE QUESTION** 115

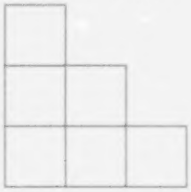
A 3-D object has the following views.

Top View

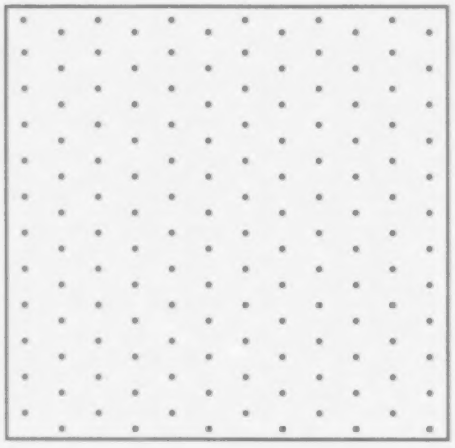


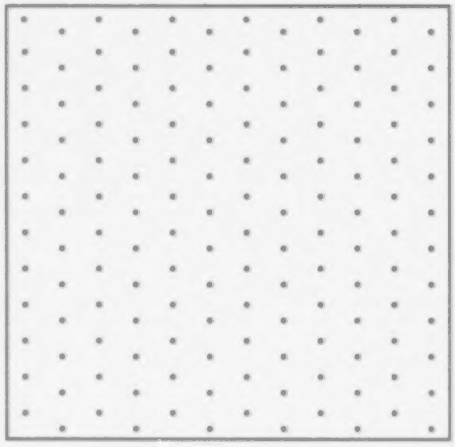
front

Front View



- Using at least nine cubes, sketch two **different** 3-D models that have the same top view and front view as given above.
- Label the **front** of each model.
- Shade the **top** of each model.





4 marks

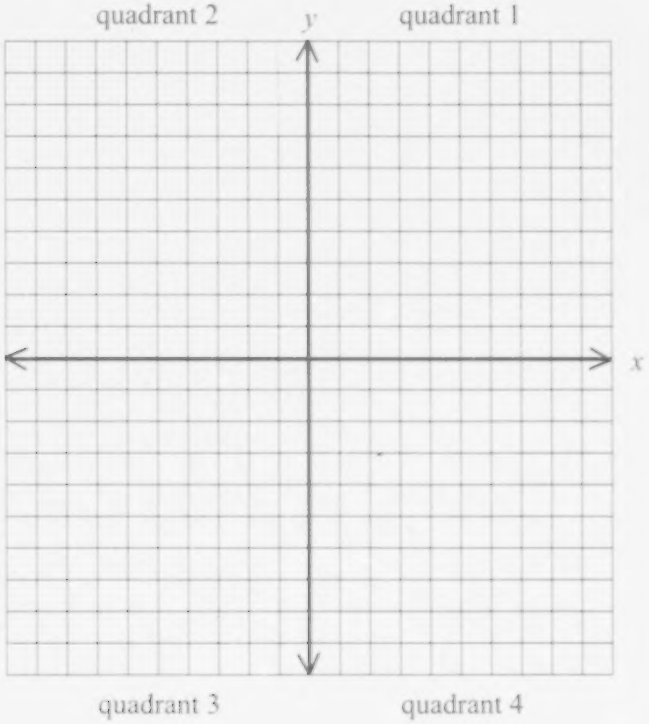
END OF TEST—CHOICE I

DO NOT USE

CHOICE II: TRANSFORMATIONAL GEOMETRY

40. Triangle ABC with vertices $A(-1, -4)$, $B(-4, -2)$ and $C(-1, -1)$ is reflected in the x-axis to form $\Delta A'B'C'$. 114

a) Draw ΔABC and its image $\Delta A'B'C'$.



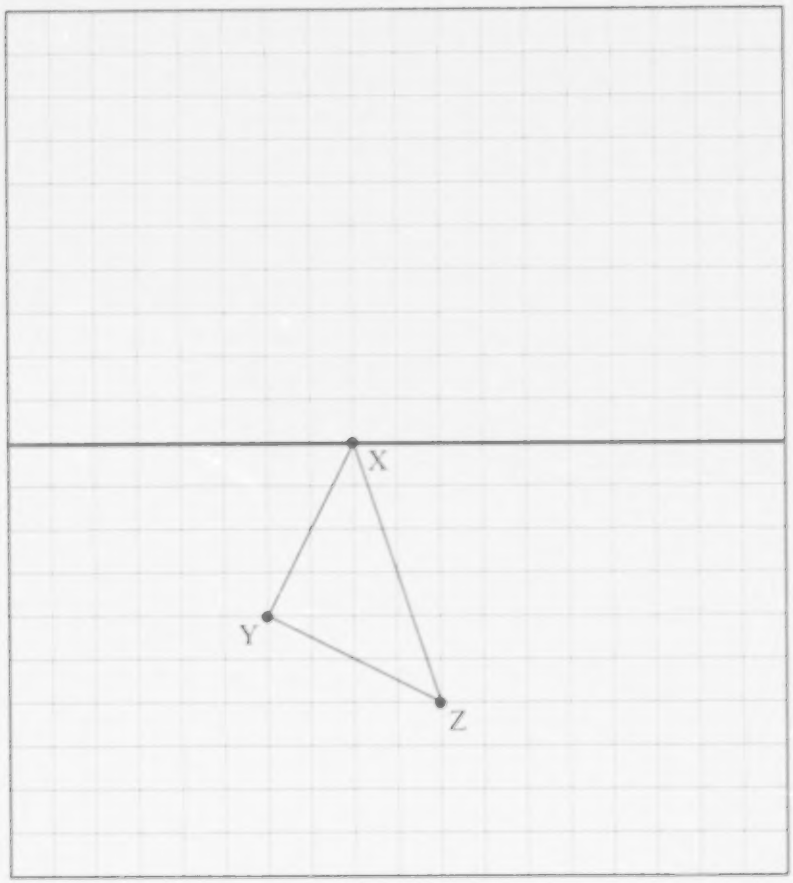
b) Describe how $\Delta A'B'C'$ could be rotated so that its image is completely located in quadrant 1 (identify centre and angle of rotation).

3 marks

DO NOT USE

41. **OPEN-RESPONSE QUESTION**

115

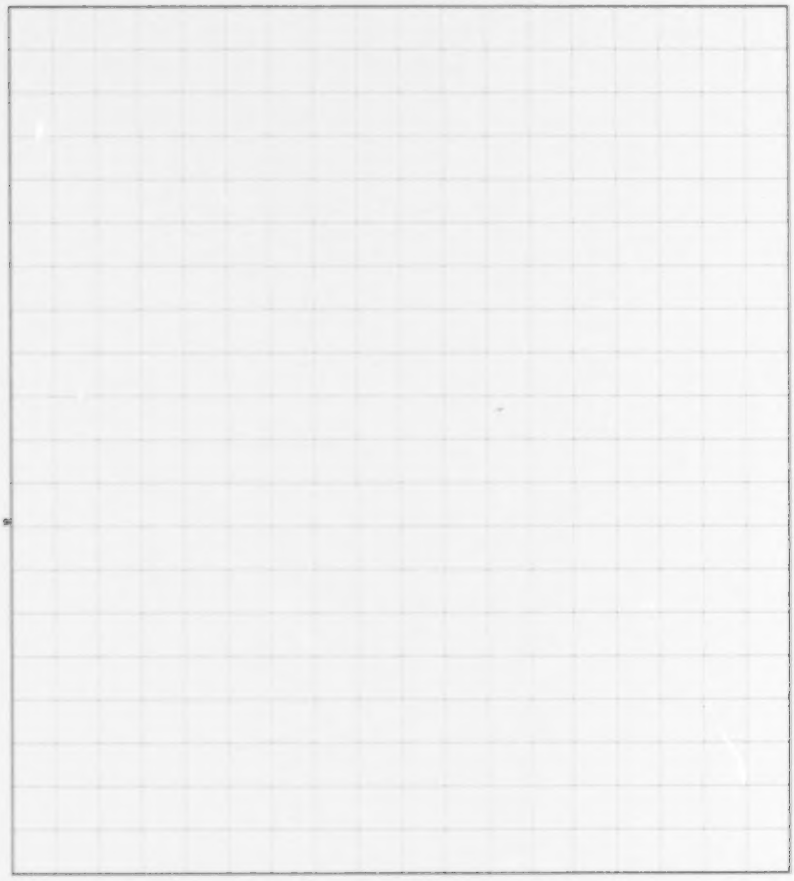


a) Describe **or** draw a translation that will move ΔXYZ completely over the dark centre line shown on the grid.

b) Draw a vertical line on the grid. Reflect the original ΔXYZ over your vertical line.

DO NOT USE

c) • **Draw** and **describe** in detail a dilatation of a shape of your choice.
- Label the vertices of your original shape.
- Label the vertices of the dilatation image.



4 marks

END OF TEST—CHOICE II

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SENIOR 1 MATHEMATICS STANDARDS TEST

Marking Guide
Choice I and Choice II

June 2004

Manitoba

Building for the Future

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General Marking Instructions

Please make no marks in the *Student Response Booklets*.

Please ensure that:

- each student's final result is recorded, by test booklet number, on the corresponding ***Answer/Scoring Sheet*** (computer scan sheet);
- the totals and the grand total are written at the bottom;
- the *Answer/Scoring Sheet* is complete and correct;
- a copy has been made for school records; and
- **only a pencil is used to complete the *Answer/Scoring Sheets*, by both students and markers.**

Once marking is completed, please forward the *Answer/Scoring Sheets* to Manitoba Education and Youth (for more information see the *Administration Manual for Supervising Teachers*).

A. Scoring the Selected-Response Questions

Please follow the instructions on the ***Answer Key for Selected-Response Questions*** on page 5 for Choice I or on page 7 for Choice II.

B. Scoring the Constructed-Response Questions

The respective marking key or scoring rubric should be used in conjunction with the ***Senior 1 Mathematics: Manitoba Curriculum Framework of Outcomes and Senior 1 Standards*** when assigning scores to student responses.

B.1 Scoring Guidelines—Restricted-Response Questions (with or without Explanation)

Each question of this type is designed to elicit a well-defined response according to the associated specific outcome(s) and relevant mathematical processes. Their purpose is to determine whether a student meets the standards for the course (level 2) as they relate to the knowledge and skills associated with the question. **Scoring is in whole-mark intervals (there are no half-marks).**

To receive full marks, a student's response must be complete and correct. Partial marks may be awarded for a "relevant strategy" with execution errors. ***A relevant strategy is defined as one that is consistent with the specific outcome(s) and mathematical processes associated with the question that, if properly executed, would lead to the correct answer.*** Where alternative strategies are possible, the ***Marking Key*** makes mention of them.

For some questions the *Marking Key* identifies errors that are "trivial". No marks are to be deducted for such errors. In order to be considered trivial, an error must be conceptually unrelated to the outcome(s) associated with the question and not lead to a mathematically incorrect answer. Such errors are distinct from minor errors (generally not conceptual in nature but leading to an incorrect answer) and major errors (an omission or error that is conceptual in nature).

B.2 Scoring Guidelines—Open-Response Questions

These questions are designed to elicit student responses at any of the three levels of achievement defined in *Senior 1 Mathematics: Manitoba Curriculum Framework of Outcomes and Senior 1 Standards*. The rubrics contain the language of the curricular standards in order to facilitate scoring in a manner that is consistent with those standards. The recommended procedure for scoring student responses is as follows:

1. Read the relevant specific outcome(s) in *Senior 1 Mathematics Framework of Manitoba Outcomes and Senior 1 Standards*.
2. Read the possible solution(s) provided in this document.
3. Study the student exemplars provided and the rationales for the assigned scores.
4. Carefully view all of the student's response and decide which of the three levels of achievement ("exceptional understanding", "good understanding" or "limited understanding") best applies. Whether the response clearly fits into one category or straddles two, this process will narrow down the number of possible scores that can be assigned to the response.
5. Compare the features of the student's response with the general performance indicators accompanying the mark values and the specific performance indicators (criteria) contained in the rubric. Note that the specific performance indicators only typify a student's response in a given score category. An exact match is not anticipated.

C. Assistance

If, during marking, any marking issue arises that cannot be resolved locally, please call Manitoba Education, Citizenship and Youth at the earliest opportunity to advise and/or seek assistance. If required, we will connect you to an advisor. Also, please be sure to notify us before making any modifications to the answer keys or scoring rubrics. Contact person: Ken Horton at 945-2576 or Barbara Riou at 945-4035 (1 800 282-8069, extension 2576 or 4035 respectively).

SCORING GUIDELINES

Answer Key for Selected-Response Questions

Answer Key for Selected-Response Questions—Choice I

If you are using this sheet by punching out holes corresponding to the correct answers and overlaying this sheet on the *Answer/Scoring Sheet*, then

1) check the student's responses for multiple bubbles first (questions with multiple bubbles are to be scored as "0");

2) overlay this page on the *Answer/Scoring Sheet*; and

3) count the number of correct responses, excluding questions with multiple responses, if any.

You may also score the selected-response questions by making a transparency of this page and overlaying it on the *Answer/Scoring Sheet*.

Remember to write the total score for the selected-response questions at the bottom of the *Answer/Scoring Sheet*.

SELECTED RESPONSE ANSWER

Fill in the best answer for each question.

1	C	14	B
2	C	15	C
3	D	16	A
4	C	17	B
5	D	18	B
6	A	19	C
7	A	20	C
8	B	21	B
9	C	22	B
10	A	23	D
11	A	24	B
12	B	25	A
13	C	26	A

Answer Key for Selected-Response Questions—Choice 1

If you are using this sheet by punching out holes corresponding to the correct answers and overlaying this sheet on the *Answer Scoring Sheet*, then

1) check the student's responses for multiple bubbles first (questions with multiple bubbles are to be scored as "0");

2) overlay this page on the *Answer Scoring Sheet*; and

3) count the number of correct responses, excluding questions with multiple responses, if any.

You may also score the selected-response questions by making a transparency of this page and overlaying it on the *Answer Scoring Sheet*.

Remember to write the total score for the selected-response questions at the bottom of the *Answer Scoring Sheet*.

SELECTED RESPONSE ANSWER

Fill in the best answer for each question.

1	○○●○	14	○●○○
2	○○●○	15	○○●○
3	○○○●	16	●○○○
4	○○●○	17	○●○○
5	○○○●	18	○●○○
6	●○○○	19	○○●○
7	●○○○	20	○○●○
8	○●○○	21	○●○○
9	○○●○	22	○●○○
10	●○○○	23	○○○●
11	●○○○	24	○●○○
12	○●○○	25	●○○○
13	○○●○	26	●○○○

Answer Key for Selected-Response Questions—Choice II

If you are using this sheet by punching out holes corresponding to the correct answers and overlaying this sheet on the *Answer/Scoring Sheet*, then

1) check the student's responses for multiple bubbles first (questions with multiple bubbles are to be scored as "0");

2) overlay this page on the *Answer/Scoring Sheet*; and

3) count the number of correct responses, excluding questions with multiple responses, if any.

You may also score the selected-response questions by making a transparency of this page and overlaying it on the *Answer/Scoring Sheet*.

Remember to write the total score for the selected-response questions at the bottom of the *Answer/Scoring Sheet*.

SELECTED RESPONSE ANSWER

Fill in the best answer for each question.

1	C	14	B
2	C	15	C
3	D	16	A
4	C	17	B
5	D	18	B
6	A	19	C
7	A	20	C
8	B	21	B
9	C	22	B
10	A	23	D
11	A	24	B
12	B	25	C
13	C	26	D

SCORING GUIDELINES

Marking Key and *Standards-Based Scoring Rubrics* (including student exemplars)

Question No. 27

Specific Outcomes: B.1 and B.4 (RR/E)

♦ **Question** 2 marks

Lisa's statistics report compares age and heart rate for a group of people while they are exercising.

a) Describe the relationship (correlation) displayed by the graph.

b) Lisa wants to use her data to predict a person's heart rate while exercising.
Describe a factor Lisa may have forgotten when collecting her data.

♦ **Answer Key**

a) As age increases, heart rate goes up when you exercise.

OR

There is a positive correlation.

b) Sample responses:

- she did not consider ages under 20 and over 50
- she did not indicate that she considered gender
- she did not indicate that she considered fitness level
- no indication of a random sample
- no indication that the type of exercise was controlled
- small sample size

Marking Key

2 marks:
- 1 mark for correct relationship in a)
- 1 mark for a reasonable factor in b)

Marker note(s):
- *use of "strong" or "weak" to describe correlation is not required for a mark in a)*

Question No. 28

Specific Outcome: B.6 (RR)

♦ **Question** 2 marks

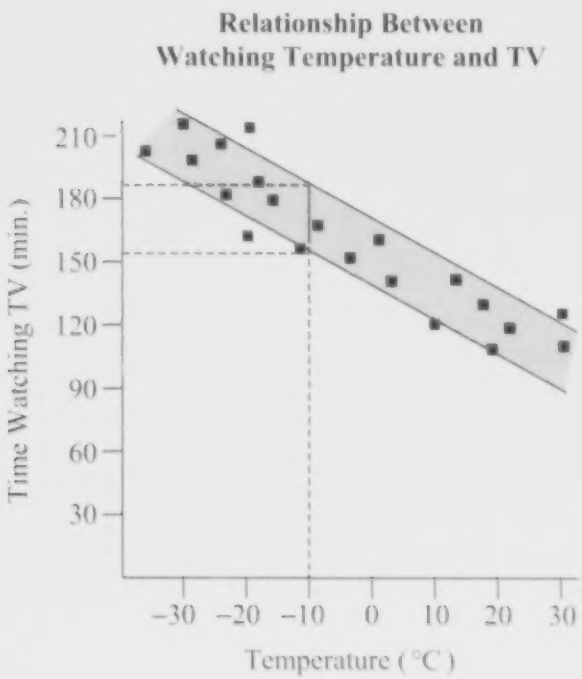
A Senior 1 Math class collected data on the daily outside temperature and the amount of time students watched TV.

a) Draw the line of best fit.

b) According to your line of best fit, estimate the amount of time students watch TV when the temperature is −10°C.

♦ **Answer Key**

a)



b) range from 155 to 185 minutes is reasonable

Marking Key

2 marks:

- 1 mark for line of best fit that is within the shaded zone indicated in the answer key for a)
- 1 mark for a reasonable estimate in b) (within the range of 155–185)

OR

- 1 mark for a reasonable estimate in b) based on student's line of best fit

Question No. 29

Specific Outcome: B.7 (RR/E)

♦ Question

4 marks

The government surveys high school students in Manitoba to determine the effect of part-time jobs on their grades.

a) Describe the **population** of the survey.

b) Describe what information needs to be collected from each student in the sample. Be complete and specific.

c) Describe one bias that is **possible** in this situation.

♦ Answer Key

a) high school students in Manitoba

b) Sample responses:

- Students marks before and after they began working at a job.
- Their marks in school and whether or not they had a job.
- Their marks in school and how many hours they worked (each week/month/semester).
- The statement "to determine the effect" could be a bias.

c) Sample responses: other answers are possible

- There would be a bias if they sampled only students that they knew.
- There would be a bias if they sampled only males.
- There would be a bias if they sampled one grade level.
- There would be a bias if they sampled in one community.
- There would be a bias if they sampled only those who got paid for working (excluding volunteers or students doing chores at home).

Marking Key

4 marks:

- 1 mark for correct answer in a)
- 2 marks for correct answer in b) (one mark for referring to student marks; one mark for referring either to the hours worked or to having a job)
- 1 mark for a reasonable bias in c)

Marker note(s):

- *a standard amount of time in b) is not necessary (e.g., "each week")*

Question No. 30

Specific Outcomes: C.1 and C.2 (RR)

♦ Question

2 marks

a) Write a number that is a natural number between $5\frac{1}{2}$ and 9.3.

b) Write a number between -10 and -3 that is a rational number but **not** an integer.

♦ Answer Key

a) 6, 7, 8 or 9

b) Sample responses:

-3.6 $\quad -5\frac{1}{2}$ $\quad -\frac{17}{3}$

Marking Key

2 marks:

- 1 mark for correct answer in a)
- 1 mark for correct answer in b)

Question No. 31

Specific Outcome: C.8 (RR/E)

♦ Question

3 marks

a) Simplify: $-5y(3x^2 - 2x + 6) + 2x^2(3y)$

Show your work

b) Jackie simplified the expression $4(3m + 5) - 3(2m - 7)$ in the following way:

$$4(3m + 5) - 3(2m - 7)$$
$$= 12m + 20 - 6m - 21$$
$$= 6m - 1$$

Explain Jackie's mistake.

♦ Answer Key

a) $-15x^2y + 10xy - 30y + 6x^2y$

$= -9x^2y + 10xy - 30y$

b) Jackie made a mistake in multiplying -3 by -7.

OR

The product should have been $+21$ instead of -21.

Marking Key

3 marks:

- 1 mark for correct strategy in a)
- 1 mark for correct answer in a)
- 1 mark for explanation of Jackie's mistake in b)

Marker note(s):

- *1 mark can be awarded in a) for the correct simplification of a distribution error*

Question No. 32

Specific Outcomes: E.2 and C.10 (OR)

QUESTION AND ANSWER KEY

32. **OPEN-RESPONSE QUESTION** | 4 marks |

Art's Pizza Palace charges $5.20 for a pizza and $0.90 for each topping.
Ross' Restaurant charges $5.80 for a pizza and $0.60 for each topping.
Both pizzas are the same size.

a) How much will a pizza with four toppings cost at Art's Pizza Palace?

$$\text{cost} = 5.20 + 4(0.9)$$
$$= \$8.80$$

b) Julie orders a pizza from Ross' Restaurant for $10.
How many toppings were on the pizza?

$$10 = 5.80 + 0.6t$$
$$10 - 5.8 = 0.6t$$
$$4.2 = 0.6t$$
$$t = \frac{4.2}{0.6}$$
$$= 7 \text{ toppings}$$

c) You want to order pizzas that are the same price from each restaurant.
Using the variable t, write an equation to find out how many toppings (t) are on these pizzas. (Do not solve the equation.)

$$5.20 + 0.9t = 5.80 + 0.6t$$

d) You open your own pizza restaurant and find that the most popular pizza ordered has four toppings.
You want your total price to be between Art's and Ross' prices for a pizza with four toppings.
How much will you charge per pizza and per topping?

cost of Art's is $8.80

cost at Ross' is $5.80 + 0.6(4)$
$= 5.80 + 2.40$
$= \$8.20$

x represents the price of toppings

my cost = $8.50 = 6.00 + x(4)$
$2.50 = 4x$
$x = 0.60$ approx.

so my cost = 6.00 + 60 cents per topping

Scoring Rubric

	Score and General Performance Indicators	Specific Performance Indicators/Criteria
Level 1 limited understanding	**1** **weak attempt**	- one criterion met
Level 2 good understanding	**2** **reasonable strategy, minor errors and/or omissions**	- two criteria met
	3 **response complete with one minor error or omission**	- three criteria met
Level 3 exceptional understanding	**4** **response complete, correct, showing insightful thinking, critical thinking, or a generalization**	- all four criteria met

Criteria:

1. correct answer of $8.80 in a)
2. correct answer of 7 toppings in b)
3. correct equation in c)
4. correct price structure between $8.20 and $8.80 inclusively in d)

Marker note(s):

- *to award criterion 4, price structure must include base price and price per topping*
- *variables need not be defined*
- *equation in c) does not need to be solved*
- *no marks deducted if $ is not included in answers—trivial error*
- *it is acceptable to include taxes*

EXEMPLARS

32. **OPEN-RESPONSE QUESTION**

Art's Pizza Palace charges \$5.20 for a pizza and \$0.90 for each topping.
Ross' Restaurant charges \$5.80 for a pizza and \$0.60 for each topping.
Both pizzas are the same size.

a) How much will a pizza with four toppings cost at Art's Pizza Palace?

5.20 + .9 + .9 + .9 + .9 = 8.80
a Pizza with for toppings will cost \$8.80

b) Julie orders a pizza from Ross' Restaurant for \$10.
How many toppings were on the pizza?

10 − 5.2 = 4.8
4.8 ÷ .6 = 8
These were 8 toppings on the pizza.

c) You want to order pizzas that are the same price from each restaurant.
Using the variable t, write an equation to find out how many toppings (t) are on these pizzas.
(Do not solve the equation.)

$5.2 + .9t = 5.8 + .6t$

There are two toppings

d) You open your own pizza restaurant and find that the most popular pizza ordered has four toppings.
You want your total price to be between Art's and Ross' prices for a pizza with four toppings.
How much will you charge per pizza and per topping?

5.2 + .9 + .9 + .9 + .9 = \$8.80
5.8 + .6 + .6 + .6 + .6 = 8.20
5.4 + .8 + .8 + .8 + .8 = 8.6

I would charge \$5.40 per pizza and \$0.80 per topping

3 marks
- criteria 1, 3, and 4 met

4 marks

32. **OPEN-RESPONSE QUESTION**

Art's Pizza Palace charges $5.20 for a pizza and $0.90 for each topping.
Ross` Restaurant charges $5.80 for a pizza and $0.60 for each topping.
Both pizzas are the same size.

a) How much will a pizza with four toppings cost at Art's Pizza Palace?

0.90 x 4 = 3.60 $5.20 + $3.60 $8.80

b) Julie orders a pizza from Ross` Restaurant for $10.
How many toppings were on the pizza?

$5.80 + 4.20 = $10 0.60 x 7 = 4.20

There are 7 toppings on the pizza

c) You want to order pizzas that are the same price from each restaurant.
Using the variable t, write an equation to find out how many toppings (t) are on these pizzas.
(Do not solve the equation.)

5.20 + 1.80 = $7 .90(t) = 1.80

5.80 + 1.20 = $7 .60(t) = 1.20

d) You open your own pizza restaurant and find that the most popular pizza ordered has four toppings.
You want your total price to be between Art's and Ross' prices for a pizza with four toppings.
How much will you charge per pizza and per topping?

Art's	Ross's
5.20 + 3.60 = 8.80	5.80 + 2.40 = 8.20
$8.80	$ 8.20

Pizza = $ 5.60
Toppings = $0.70
5.50 + 2.80 $8.40

3 marks
- criteria 1, 2, and 4 met

4 marks

Question No. 33

Specific Outcomes: H.6 and H.10 (RR)

♦ **Question** 2 marks

A diagram of a rectangular playing field is shown below.
The length of the field is $6n$ metres.

a) Write the simplified algebraic expression for the width of the field.

b) If $n = 0.8$, calculate the area of the field.

♦ **Answer Key**

a) $\text{width} = \dfrac{30n^2 - 12n}{6n}$

$= 5n - 2$

b) $30(0.8)^2 - 12(0.8)$

$= 9.6 \text{ m}^2$

Marking Key

2 marks:

- 1 mark for correct answer in a)
- 1 mark for correct answer in b)

Marker note(s):

- *omitting units is a trivial error (no deduction)*

Question No. 34

Specific Outcome: E.2 (RR)

♦ **Question** 2 marks

Solve the equation. Show your work.

$0.1x - 5.2 = 4.8 - 1.9x - 4$

♦ **Answer Key**

Sample strategy:

$0.1x - 5.2 = 4.8 - 1.9x - 4$

$0.1x - 5.2 = 0.8 - 1.9x$

$2x = 6$

$x = 3$

Marking Key

2 marks:

- 1 mark for correct strategy
- 1 mark for correct answer

Marker note(s):

- *give 1 mark for only one error that has been followed through*

Question No. 35

Specific Outcomes: G.3 and G.1 (RR/E)

♦ Question

3 marks

The table shows the total number of students in three different classrooms, as well as the number of girls in each class.

a) A student is randomly selected from each class.
From which class is a **boy** most likely to be selected?

b) Sally is in Class A, Chris is in Class B and Frank is in Class C. If one student from each class is randomly selected to form a committee, what is the probability that these three students will be on the committee?

	Students	Girls
Class A	30	18
Class B	20	12
Class C	24	10

♦ Answer Key

a) class C

b) $\frac{1}{30} \times \frac{1}{20} \times \frac{1}{24} = \frac{1}{14\,400}$

Marking Key

3 marks:

- 1 mark for correct answer in a)
- 1 mark for correct strategy in b)
- 1 mark for correct answer in b)

Marker note(s):

- *in part b), if student's strategy is to add probabilities, award no marks*
- *multiplication of independent events must be shown in b)*
- *answer in b) may be expressed as a decimal or percent*

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Question No. 36

Specific Outcome: H.3 (OR)

QUESTION AND ANSWER KEY

36. **OPEN-RESPONSE QUESTION** | 4 marks |

a) Simplify $\dfrac{x^{12}}{x^4}$.

$x^{12-4} = x^8$

b) Using three different exponent laws other than the quotient law used in a), write three expressions that give the same answer as a).

Exponent Laws (marker reference)	Possible Answers
$x^m \cdot x^n = x^{m+n}$	$(x^3)(x^5) = x^8$
$(x^m)^n = x^{mn}$	$(x^2)^4 = x^8$
$(xy)^{mn} = x^m y^n$	$[(x^2)(x^2)]^2 = x^8$
$\left(\dfrac{x}{y}\right)^n = \dfrac{x^n}{y^n},\ y \neq 0$	$\left(\dfrac{x^6}{x^4}\right)^4 = x^8$
$x^0 = 1,\ x \neq 0$	$(x^8)(x^0) = x^8$
$x^{-n} = \dfrac{1}{x^n}$	$\dfrac{1}{x^{-8}} = x^8$
$x^m \div x^n = x^{m-n}$	- not acceptable as it is used in a)

Scoring Rubric

	Score and General Performance Indicators	Specific Performance Indicators/Criteria
Level 1 limited understanding	**1** **weak attempt**	- one criterion met
Level 2 good understanding	**2** **reasonable strategy, minor errors and/or omissions**	- two criteria met
	3 **response complete with one minor error or omission**	- three criteria met
Level 3 exceptional understanding	**4** **response complete, correct, showing insightful thinking, critical thinking, or a generalization**	- all four criteria met

Criteria:

1. correct answer of x^5 in a)
2. another correct expression applying a different exponent law
3. another correct expression applying a different exponent law
4. another correct expression applying a different exponent law

} different laws in combinations are acceptable

Marker note(s):

- *in b), if student uses different exponent laws to obtain equivalent expressions that are not equivalent to a), deduct 1 mark only*
- *in b), if student uses different exponent laws with non-equivalent expressions award only 1 mark*
- *in b), if student correctly uses three different exponent laws in one (or two) expressions, award full marks*

EXEMPLARS

36. **OPEN-RESPONSE QUESTION**

a) Simplify $\frac{x^{12}}{x^4}$.

$= x^9$

b) Using three **different** exponent laws other than the quotient law used in a), write three expressions that give **the same answer** as a).

Expression 1	Expression 2	Expression 3
$(x^3)^3$	$(x^6)(x^3)$	$\frac{1}{x^{-9}}$

3 marks
- criteria 2, 3, and 4 met

4 marks

36. **OPEN-RESPONSE QUESTION**

a) Simplify $\frac{x^{12}}{x^4}$.

x^8

b) Using three **different** exponent laws other than the quotient law used in a), write three expressions that give **the same answer** as a).

Expression 1	Expression 2	Expression 3
$(x^4)(x^4)$	$(x^2)^4$	$\frac{(x^4)(x^{10})}{(x^6)}$

3 marks
- criteria 1, 2, and 3 met

4 marks

Question No. 37

Specific Outcome: I.1 (RR/E)

♦ Question

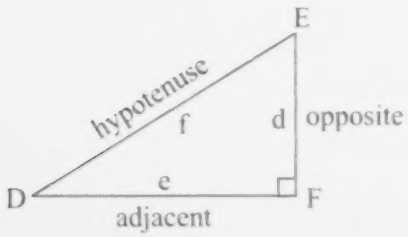
2 marks

a) Write the words **hypotenuse**, **adjacent** to $\angle D$ and **opposite** to $\angle D$ on the appropriate sides of the triangle DEF.

b) Explain why $\sin \angle D = \cos \angle E$ in ΔDEF.

♦ Answer Key

a)



b) $\sin \angle D = \cos \angle E$

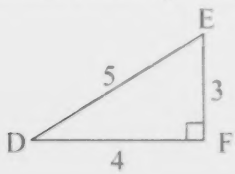
$\frac{d}{f} = \frac{d}{f}$ ***OR*** $\frac{EF}{DE} = \frac{EF}{DE}$

OR

the side opposite $\angle D$ is the side adjacent to $\angle E$
$\therefore \sin \angle D = \cos \angle E$

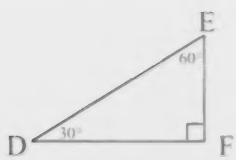
OR

numbers used by the student



$\sin \angle D = \frac{3}{5}$ $\cos \angle E = \frac{3}{5}$

OR



$\sin 30° = 0.5$

$\cos 60° = 0.5$

Marking Key

2 marks:

- 1 mark for correct answer in a)
- 1 mark for correct answer in b)

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Question No. 38

Specific Outcome: A.1 (OR)

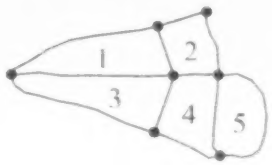
QUESTION AND ANSWER KEY

38. **OPEN-RESPONSE QUESTION** | 4 marks |

The map below is drawn showing towns, roads and regions.

map:

5 regions
7 towns
11 roads



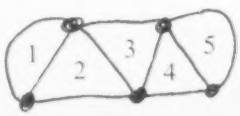
- **towns are represented by •**
- **towns are connected by roads**
- **regions are identified with numbers**
- **roads only intersect at towns**

a)
- **Draw three different maps, each with five regions.**
- **Use a different number of towns for each map.**
- **Number each region like the above example.**

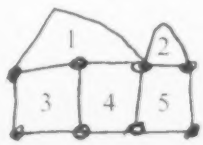
Sample responses:

Map 1

Map 2



Map 3



b) Complete the table:

Map	No. of Regions	No. of Towns	No. of Roads
example	5	7	11
1	5	3	7
2	5	5	9
3	5	8	12

c) Describe one pattern that relates the number of regions, roads and towns. The pattern must work for all maps.

- four more roads than towns when there are five regions
- the difference between road and town is one less than the number of regions

d) What would be a pattern for any map with three regions?

There are always two more roads than towns.

Scoring Rubric

	Score and General Performance Indicators	Specific Performance Indicators/Criteria
Level 1 limited understanding	**1** **weak attempt**	- one criterion met
Level 2 good understanding	**2** **reasonable strategy, minor errors and/or omissions**	- two criteria met
	3 **response complete with one minor error or omission**	- three criteria met
Level 3 exceptional understanding	**4** **response complete, correct, showing insightful thinking, critical thinking, or a generalization**	- all four criteria met

Criteria:

1. 2 correct drawings in a)
2. chart correct and complete based on drawings in a) with at least 2 of 3 rows correct
3. one correct pattern in c)
4. one correct pattern in d)

Marker note(s):

- *no numbers in a) is a trivial error, no marks deducted*
- *in c) and d), students may use an algebraic equation to describe the pattern*

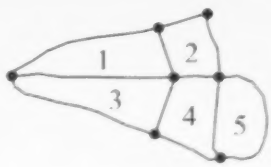
EXEMPLARS

38. **OPEN-RESPONSE QUESTION**

The map below is drawn showing towns, roads and regions.

map:

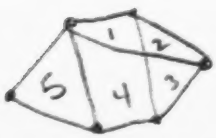
5 regions
7 towns
11 roads



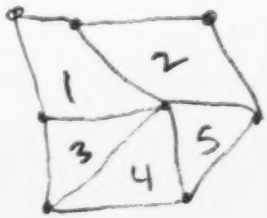
- towns are represented by •
- towns are connected by roads ——
- regions are identified with numbers
- roads only intersect at towns

a)
- Draw three different maps, each with five regions.
- Use a different number of towns for each map.
- Number each region like the above example.

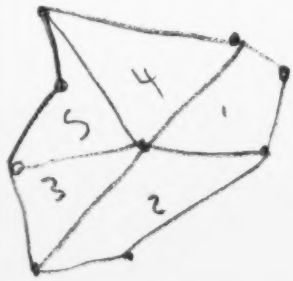
Map 1



Map 2



Map 3



b) Complete the table:

Map	No. of Regions	No. of Towns	No. of Roads
example	5	7	11
1	5	6	9
2	5	8	12
3	5	9	13

c) Describe one pattern that relates the number of regions, roads and towns. The pattern must work for all maps.

It is either a +4 or 3 from the # of towns to the # of roads

d) What would be a pattern for any map with three regions?

2 marks
- criteria 1 and 2 met

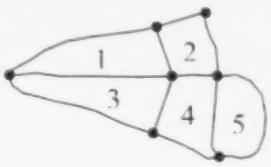
4 marks

38. **OPEN-RESPONSE QUESTION**

The map below is drawn showing towns, roads and regions.

map:

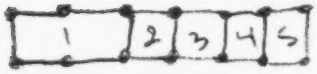
5 regions
7 towns
11 roads



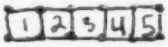
- towns are represented by •
- towns are connected by roads ——
- regions are identified with numbers
- roads only intersect at towns

a)
- Draw three different maps, each with five regions.
- Use a different number of towns for each map.
- Number each region like the above example.

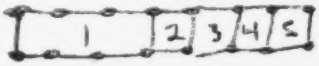
Map 1



Map 2



Map 3



b) Complete the table:

Map	No. of Regions	No. of Towns	No. of Roads
example	5	7	11
1	5	14	17
2	5	12	16
3	5	16	20

c) Describe one pattern that relates the number of regions, roads and towns. The pattern must work for all maps.

the number of roads will always out number the amount of towns

d) What would be a pattern for any map with three regions?

2 marks
- criteria 1 and 2 met

4 marks

Question No. 39

Specific Outcomes: I.3 and I.4 (RR)

♦ Question

3 marks

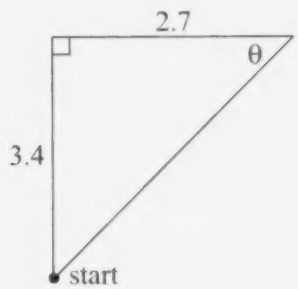
Mark goes for a hike. He leaves his car and walks 3.4 km straight north and then 2.7 km straight east. He then turns and walks in a straight line back to his car.

a) Draw and label a diagram that represents the path Mark walked.

b) Using trigonometry, calculate the angle Mark follows when he turns to head straight back to his car. Show your work.

♦ Answer Key

a)



b) $\tan\theta = \dfrac{3.4}{2.7}$

$\theta = \tan^{-1}\left(\dfrac{3.4}{2.7}\right)$

$\theta = 51.5°$ (or 52°, 51.55°)

Marking Key

3 marks:

- 1 mark for correctly labelled diagram in a)
- 1 mark for correct trigonometric strategy in b) according to their diagram in a)
- 1 mark for correct calculation of angle according to their trigonometric strategy in b)

Marker note(s):

- *the right angle and θ do not need to be labelled*
- *the answer 308° in b) is an acceptable answer*

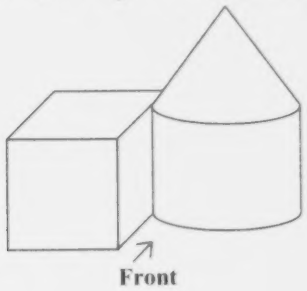
Question No. 40—Choice I only

Specific Outcome: D.2 (RR)

♦ **Question** 3 marks

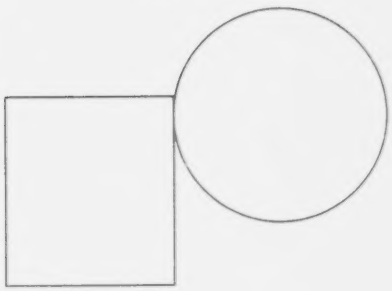
This diagram was drawn from a model made of a rectangular prism, cylinder and a cone.

- Draw the top view, the right elevation and the front elevation.

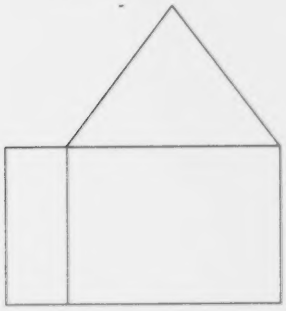


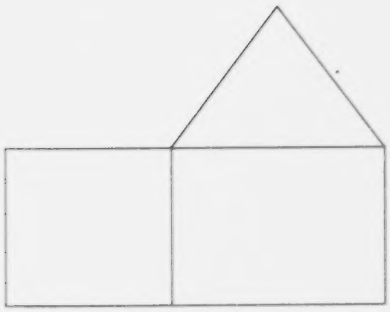
♦ **Answer Key**

Top View



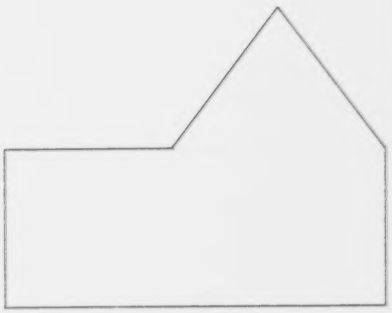
Right Elevation





Front Elevation

OR



Front Elevation

Marking Key

3 marks:

- 1 mark for correct top view
- 1 mark for correct right elevation
- 1 mark for correct front elevation

Marker note(s):

- *deduct maximum of one mark if elevations drawn are very disproportionate or curved*
- *lines in the interior of the figure are optional*
- *top view diagram must show that the cylinder is set back from the front of the rectangular prism*

Question No. 41—Choice I only

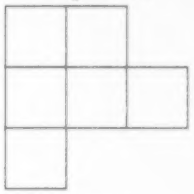
Specific Outcome: D.3 (OR)

QUESTION AND ANSWER KEY

41. **OPEN-RESPONSE QUESTION** | 4 marks |

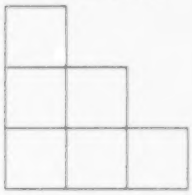
A 3-D object has the following views.

Top View



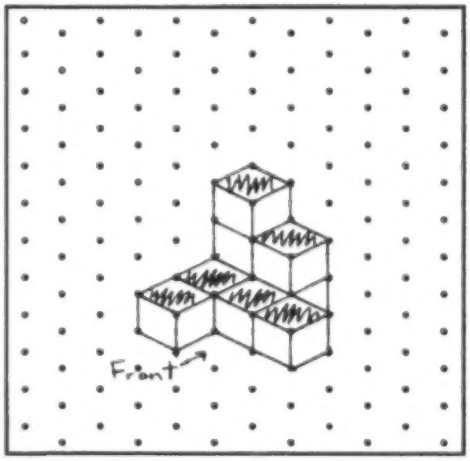
front

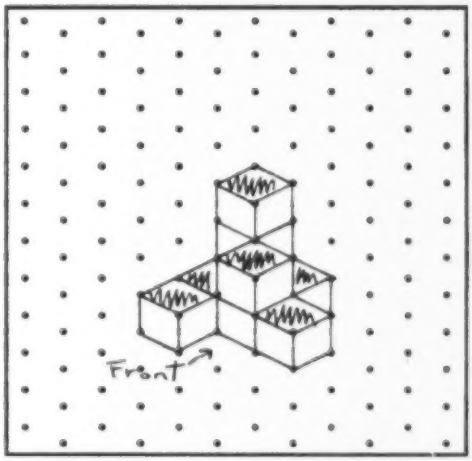
Front View

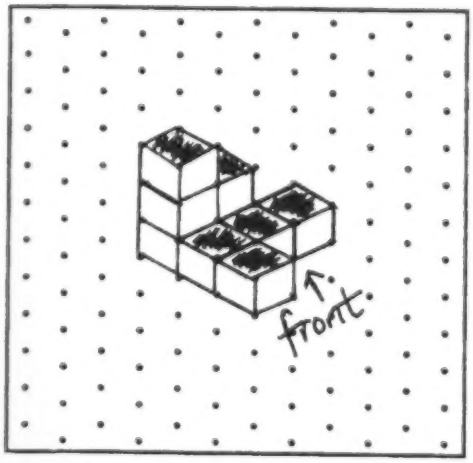


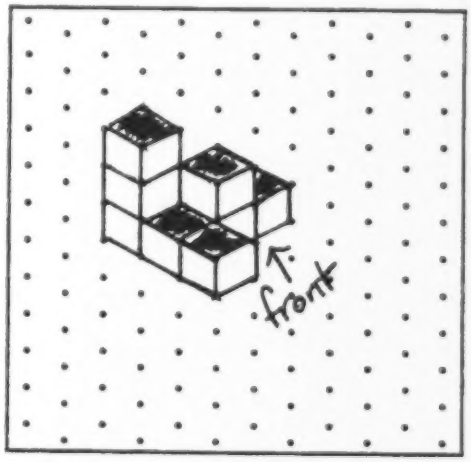
- **Using at least nine cubes, sketch two different 3-D models that have the same top view and front view as given above.**
- **Label the front of each model.**
- **Shade the top of each model.**

Sample answers:









Scoring Rubric

	Score and General Performance Indicators	Specific Performance Indicators/Criteria
Level 1 limited understanding	**1** **weak attempt**	- one criterion met
Level 2 good understanding	**2** **reasonable strategy, minor errors and/or omissions**	- two criteria met
	3 **response complete with one minor error or omission**	- three criteria met
Level 3 exceptional understanding	**4** **response complete, correct, showing insightful thinking, critical thinking, or a generalization**	- all four criteria met

Criteria:

1. 2 objects sketched using at least 9 cubes
2. one object has correct top view
3. one object has correct front view
4. both objects have correct top view and front view

Marker note(s):

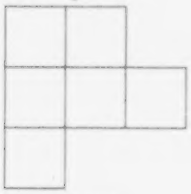
- *do not deduct a mark if front is not labelled; assume front, as in exemplars*
- *do not deduct a mark if cubes are not shaded*
- *hidden cubes are possible*

EXEMPLARS

41. **OPEN-RESPONSE QUESTION**

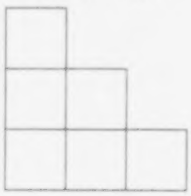
A 3-D object has the following views.

Top View

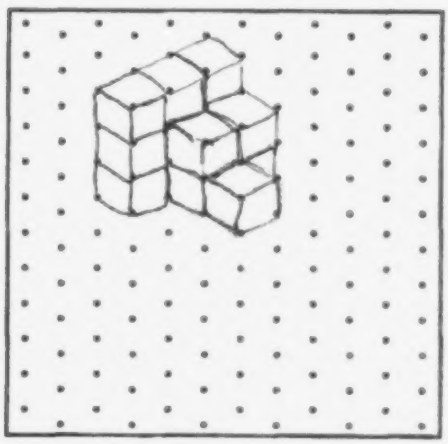


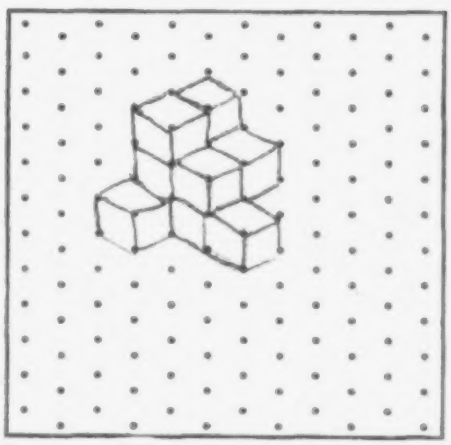
front

Front View



- Using at least nine cubes, sketch two **different** 3-D models that have the same top view and front view as given above.
- Label the **front** of each model.
- Shade the **top** of each model.





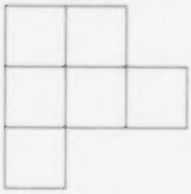
4 marks
- all criteria met

4 marks

41. **OPEN-RESPONSE QUESTION**

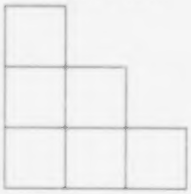
A 3-D object has the following views.

Top View

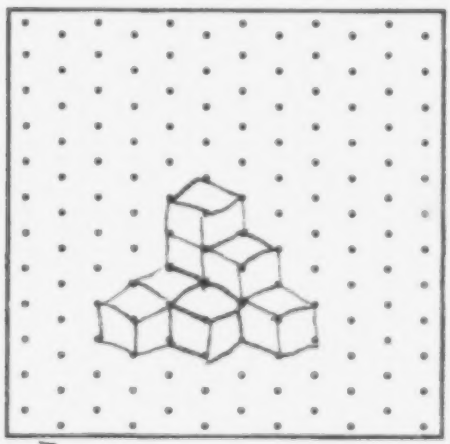


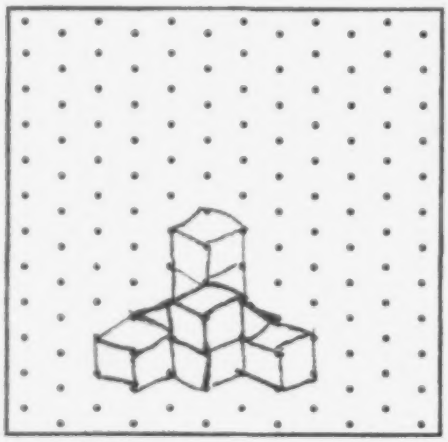
front

Front View



- Using at least nine cubes, sketch two **different** 3-D models that have the same top view and front view as given above.
- Label the **front** of each model.
- Shade the **top** of each model.





2 marks
- criteria 1 and 3 met

4 marks

Question No. 40—Choice II only

Specific Outcomes: K.1 and K.2 (RR)

♦ Question

3 marks

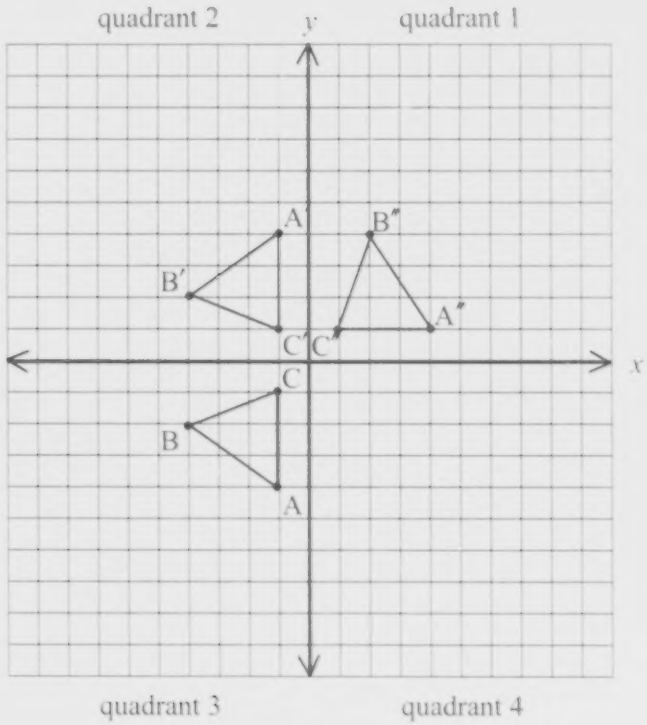
Triangle ABC with vertices A(−1, −4), B(−4, −2) and C(−1, −1) is reflected in the x-axis to form $\Delta A'B'C'$.

a) Draw ΔABC and its image $\Delta A'B'C'$.

b) Describe how $\Delta A'B'C'$ could be rotated so that its image is completely located in quadrant 1 (identify centre and angle of rotation).

♦ Answer Key

a)



b) Possible answers:

- rotation of 90° clockwise about the origin
  C″ (1,1) B″ (2,4) A″ (4,1)
- rotation of 180° about (0, 3) or (0, ≥ 2)

Marking Key

3 marks:

- 1 mark for ΔABC correctly placed
- 1 mark for $\Delta A'B'C'$ based on their drawing of ΔABC
- 1 mark for correct description of rotation of $\Delta A'B'C'$ in quadrant 1

Marker note(s):

- *accept rotation where vertex or side touches an axis*
- *in b) rotation must be described by centre and angle of rotation*

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Question No. 41—Choice II only

Specific Outcome: K.1 (OR)

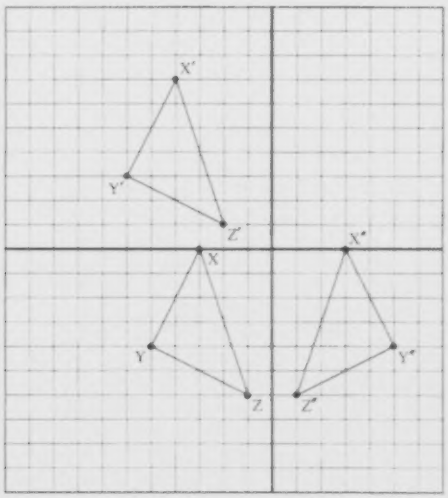
QUESTION AND ANSWER KEY

41. **OPEN-RESPONSE QUESTION** 4 marks

a) Describe or draw a translation that will move ΔXYZ completely over the dark centre line shown on the grid.

b) Draw a vertical line on the grid. Reflect the original ΔXYZ over your vertical line.

Sample response for a) and b):



c)
- **Draw and describe in detail a dilatation of a shape of your choice.**
- **Label the vertices of your original shape.**
- **Label the vertices of the dilatation image.**

– dilatation could be an enlargement or reduction of any scale
– description must identify scale factor and length of sides must match scale factor

Scoring Rubric

	Score and General Performance Indicators	Specific Performance Indicators/Criteria
Level 1 limited understanding	**1** **weak attempt**	- one criterion met
Level 2 good understanding	**2** **reasonable strategy, minor errors and/or omissions**	- two criteria met
	3 **response complete with one minor error or omission**	- three criteria met
Level 3 exceptional understanding	**4** **response complete, correct, showing insightful thinking, critical thinking, or a generalization**	- all four criteria met

Criteria:

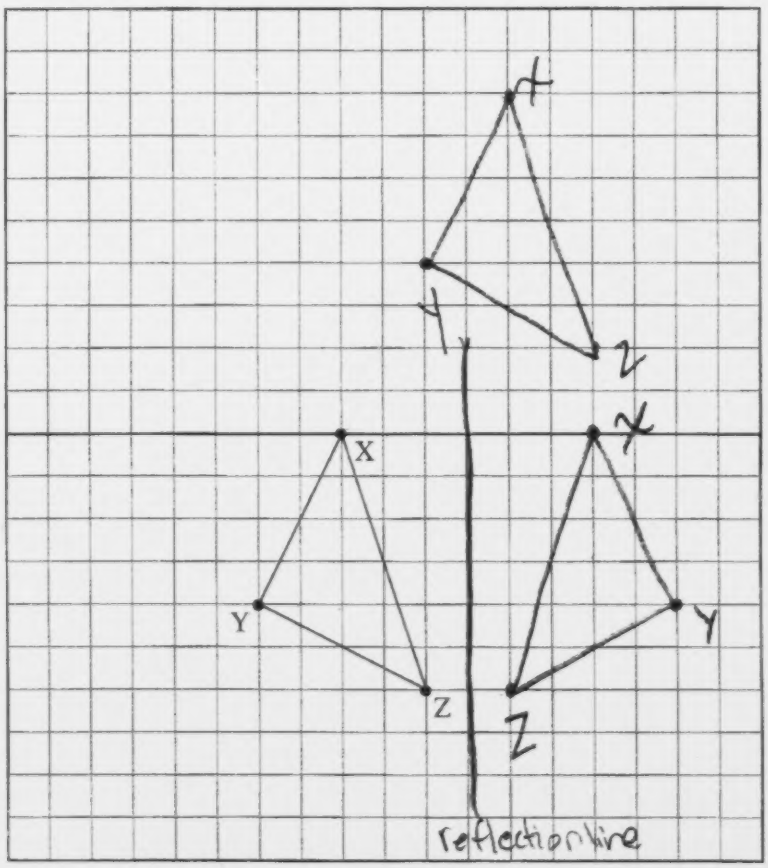
1. *a) correct translation (at least 6 units vertically) or correct description*
2. *b) correct reflection of the original ΔXYZ over the student's vertical line*
3. *dilatation correctly drawn*
4. *description matches student's dilatation*

Marker note(s):

- *no marks deducted if the student has correctly drawn a reflection of $\Delta X'Y'Z'$ instead of ΔXYZ*
- *dilatation does not have to have corresponding vertices joined*
- *centre of dilatation not necessary in description*
- *not labelling in c) is a trivial error, no marks deducted*
- *if a dilatation is partially drawn correctly and the description matches the correctly drawn part, award criterion 4 but not 3*

EXEMPLARS

41. **OPEN-RESPONSE QUESTION**



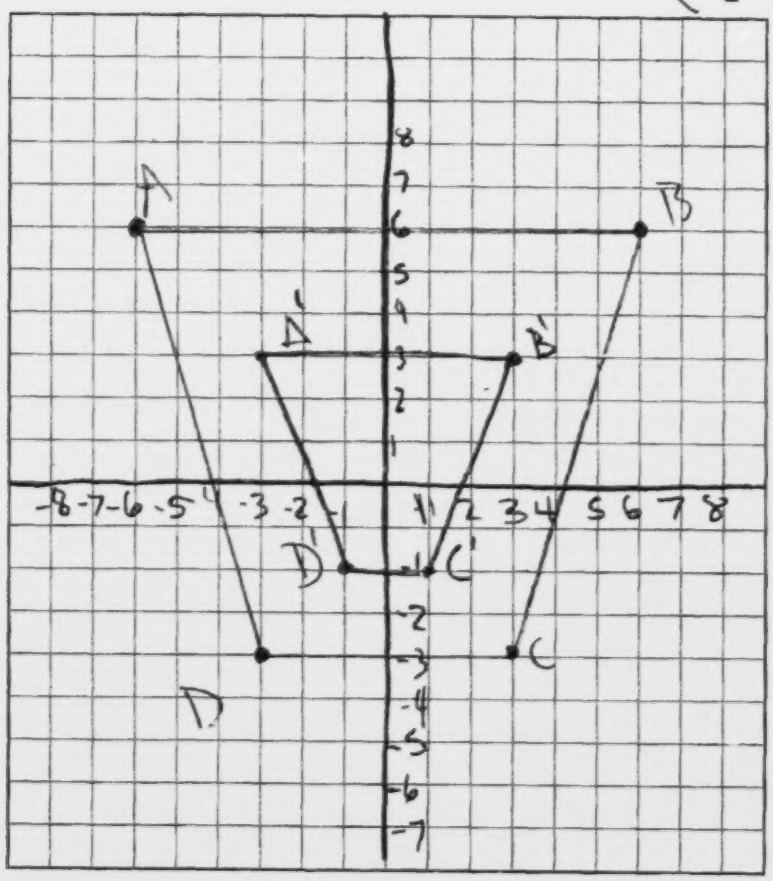
a) Describe **or** draw a translation that will move ΔXYZ completely over the dark centre line shown on the grid.

Translate the ΔXYZ (+4, +8)

b) Draw a vertical line on the grid. Reflect the original ΔXYZ over your vertical line.

c) • **Draw** and **describe** in detail a dilatation of a shape of your choice.
- Label the vertices of your original shape.
- Label the vertices of the dilatation image.

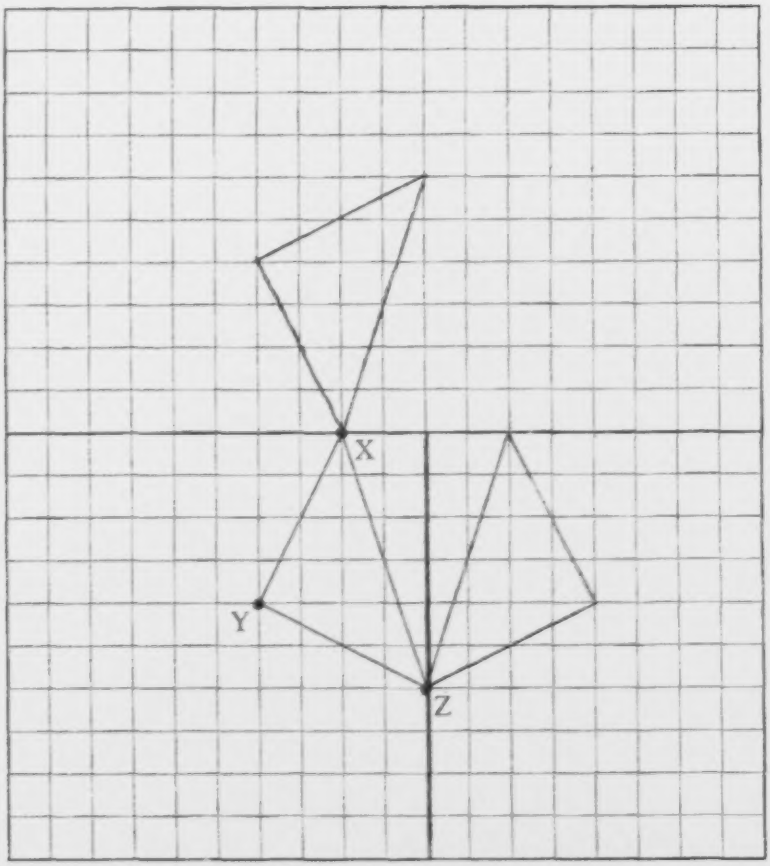
I Dialated the shape ($\frac{1}{2} \times \frac{1}{2}$ 4)



3 marks
- criteria 1, 2 and 4 met

4 marks

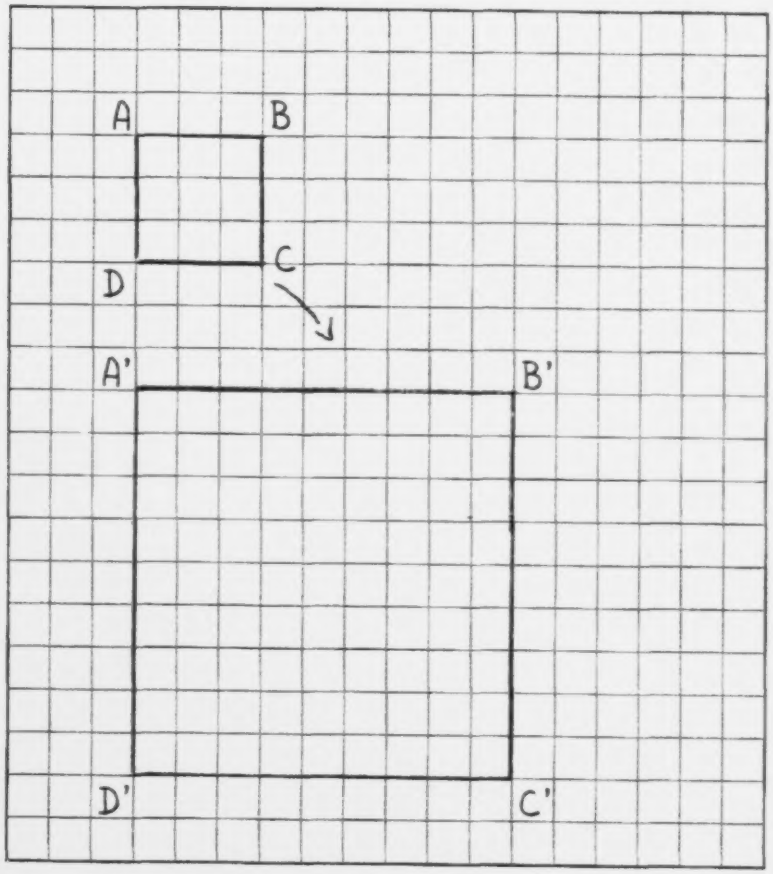
41. **OPEN-RESPONSE QUESTION**



a) Describe **or** draw a translation that will move ΔXYZ completely over the dark center line shown on the grid.

b) Draw a vertical line on the grid. Reflect the original ΔXYZ over your vertical line.

c) • **Draw** and **describe** in detail a dilatation of a shape of your choice.
- Label the vertices of your original shape.
- Label the vertices of the dilatation image.



I dilated a shape with measurements of 3 by 3 to 9 by 9.

2 marks
- criteria 2 and 3 met

4 marks

APPENDICES

Appendix A

SPECIFIC OUTCOME MATCH

Selected-Response Questions		
Question No.	**Unit(s)**	**Specific Outcome(s)**
1	A	1
2	A	1
3	J/A	4/1
4	B	2
5	C	3
6	C	4
7	C	6
8	C	9
9	E	2
10	E	2
11	E	2
12	F	2
13	F	2
14	G	3
15	G	3
16	H	1
17	H	2
18	H	6
19	H	7
20	H	10
21	H	12
22	H	13
23	I	2
24	I	3
Choice I		
25	D	1
26	D	2
Choice II		
25	K	2
26	K	3

Restricted-Response Questions			
Question No.	**Unit(s)**	**Specific Outcome(s)**	**Mark Value**
28	B	6	2
33	H	6, 10	2
34	E	2	2
39	I	3, 4	3
Choice I			
40	D	2	3
Choice II			
40	K	1, 2	3

Restricted-Response with Explanation Questions			
Question No.	**Unit(s)**	**Specific Outcome(s)**	**Mark Value**
27	B	1, 4	2
29	B	7	4
30	C	1, 2	2
31	C	8	3
35	G	3, 1	3
37	I	1	2
Choice I			
Choice II			

Open-Response Questions			
Question No.	**Unit(s)**	**Specific Outcome(s)**	**Mark Value**
32	E/C	2/10	4
36	H	3	4
38	A	1	4
Choice I			
41	D	3	4
Choice II			
41	K	1	4

Appendix B

DOUBLE MARKING RECORD SHEET

FIRST MARKING BOOKLET NO.

_____

Marker ID	Question	Score
	27	
	28	
	29	
	30	
	31	
	32	
	33	
	34	
	35	
	36	
	37	
	38	
	39	
	40	
	41	
	Total	

DOUBLE MARKING RECORD SHEET

SECOND MARKING BOOKLET NO.

_____

Marker ID	Question	Score
	27	
	28	
	29	
	30	
	31	
	32	
	33	
	34	
	35	
	36	
	37	
	38	
	39	
	40	
	41	
	Total	

Appendix C

GENERATING STUDENT PROFILES—CHOICE I

Profile of Test Score by Question Type

Question Type	Test Questions	Total	÷ Maximum	× 100	= %
Selected Response	1 to 26: __		26		
Restricted Response	28 __, 33 __, 34 __, 39 __, 40 __		12		
Restricted Response with Explanation	27 __, 29 __, 30 __, 31 __, 35 __, 37 __		16		
Open Response	32 __, 36 __, 38 __, 41 __		16		
Example					
Open Response	32 2, 36 4, 38 3, 41 3	12	÷ 16	× 100	75%

Profile of Test Score by Curricular Strand

Strand	Test Questions	Total	÷ Maximum	× 100	= %
Shape and Space	3 __, 12 __, 13 __, 23 to 26 __, 37 __, 39 __, 40 __, 41 __		19		
Number	1 __, 2 __, 5 __, 6 __, 7 __, 8 __, 9 __, 10 __, 11 __, 16 __, 17 __, 18 __, 19 __, 20 __, 21 __, 22 __, 30 __, 31 __, 32 __, 33 __, 34 __, 36 __		33		
Statistics and Probability	4 __, 14 __, 15 __, 27 __, 28 __, 29 __, 35 __		14		
Patterns and Relations	38 __		4		

Appendix D

GENERATING STUDENT PROFILES—CHOICE II

Profile of Test Score by Question Type

Question Type	Test Questions	Total	÷ Maximum	× 100	= %
Selected Response	1 to 26: __		26		
Restricted Response	28 __, 33 __, 34 __, 39 __, 40 __		12		
Restricted Response with Explanation	27 __, 29 __, 30 __, 31 __, 35 __, 37 __		16		
Open Response	32 __, 36 __, 38 __, 41 __		16		
Example					
Open Response	32 2, 36 4, 38 3, 41 3	12	÷ 16	× 100	75%

Profile of Test Score by Curricular Strand

Strand	Test Questions	Total	÷ Maximum	× 100	= %
Shape and Space	3 __, 12 __, 13 __, 23 to 26 __, 37 __, 39 __, 40 __, 41 __		19		
Number	1 __, 2 __, 5 __, 6 __, 7 __, 8 __, 9 __, 10 __, 11 __, 16 __, 17 __, 18 __, 19 __, 20 __, 21 __, 22 __, 30 __, 31 __, 32 __, 33 __, 34 __, 36 __		33		
Statistics and Probability	4 __, 14 __, 15 __, 27 __, 28 __, 29 __, 35 __		14		
Patterns and Relations	38 __		4		